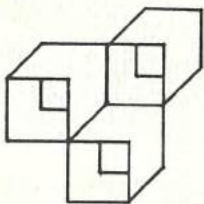


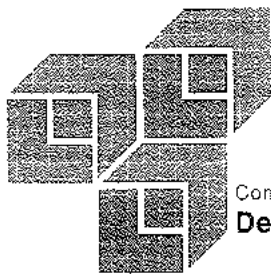
*Deputy*  
MAL DENNETT.



fifty years of  
construction.



Commonwealth of Australia  
Department of Housing & Construction  
West Australian Region



Commonwealth of Australia

**Department of Housing & Construction**

In reply please quote

Contact

This history comprises articles originally written by members of the Department of Housing and Construction in 1979 during Western Australia's 150th year.

The articles have been collected and produced in this form on the eve of the retirement of our Director, F.W. Statham, O.B.E., E.D., F.I.E. (Aust) in recognition of his leadership during the last sixteen years.

June 1981

*Western Australia Region*

Sheraton Court, 207 Adelaide Terrace, Perth, WA 6000 GPO Box C115, Perth 6001.  
Telephone: (09)3230211. Telegrams: COMWORKS Telex: 92260

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## '50 YEARS OF CONSTRUCTION'

### A HISTORY OF THE COMMONWEALTH DEPARTMENT OF HOUSING AND CONSTRUCTION IN WESTERN AUSTRALIA

#### 1. INTRODUCTION

The purpose of this history is to describe works carried out by the Department of Housing and Construction since its establishment as an entity in Western Australia in the 1920's, and its role as the design and construction authority for the Commonwealth government.

Its growth from a small beginning in its early days to its present size has been remarkable, even in era of general expansion and rapidly changing technology.

It is now a substantial organisation, capable of carrying out any of the responsibilities likely to be undertaken by the Commonwealth in Western Australia.

In order to present a composite picture of this Department's role, typical selected works have been outlined showing their contribution to the development in works and buildings for each particular service of the Commonwealth for the community of Western Australia.

It is desired to convey the sense of long term continuity of this service that has been achieved by the officer of this Region over three generations. Many of them have served the greater part of their working lives at all levels in the Department with a dedication to duty for the betterment of their tasks, not immediately apparent but clearly visible in perspective. This continuous team spirit has become instinctive in this department of the government service and is aimed at the common objective of achieving good work.

It has only been possible by the close co-operation of client departments' officers, consulting and contracting firms, and the members of the Department of Housing and Construction.

Great advantage has been gained by the assistance of phenomenal technology development over recent years.

Despite many changes of the name of the Department and continuous expansion, reinforcement and retirement of its work force, this continuity has been possible by recognition of the standards of excellence already achieved.

The tradition of client service is our principal aim. It has been in the past and will be in the future.

## DEPARTMENT OF HOUSING AND CONSTRUCTION

### 2.1 ORGANISATION AND HISTORY

The Department of Housing and Construction has been associated in Western Australia with the building and engineering construction industry since federation. It has not always been known as the Department of Housing and Construction.

The works function has been under the control of many Departments over the intervening years since federation. For example - Home Affairs, Works and Railways, Department of Interior and Department of Works to mention a few. It is the latter name - Department of Works - where the Department is best identified as the name itself describes its function. A works department.

Originally the State Government carried out all the construction work for the Commonwealth in Western Australia and an officer known as the 'Works Registrar' was the liaison officer for the Commonwealth who worked closely with the State Public Works Department on construction matters in the early part of the century.

To the best of our knowledge, the first Works Registrar was a Mr A. Green.

#### DIRECTORS

In the mid 1920's, and it was the 12 March 1925 to be exact, when the first Director of Works was appointed to control the works activities for the Commonwealth in Perth.

The first Director was George Sydney Cook, who took up duty in Perth on 27 March 1925 as Director of Works and Railways, Western Australia Branch, on a salary of £557 per annum.



Mr Cook had a long reign as Director and he stayed in Western Australia until January 1940 when he was transferred to Sydney.

There have been surprisingly few Directors, only 8 in all, and 2 of these officers have served periods in excess of 15 years. The Directors following Mr Cook were:-

Harold Beresford Sturtevant	23.1.40	30.3.50
Leonard Cuthbert Lucas	1.8.50	17.10.57
George Douglas Bennett Maunder	22.10.57	24.4.58
Robert Michael Baxter	12.6.58	3.3.61
Frank Grahame Vidgen	5.2.62	1.3.63
Ronald Albert Thomas Ledger	23.10.63	10.4.65
Francis West Statham	13.4.65	19.6.81

In the 53 years since Directors were appointed the first Director, Mr Cook served 15 years and Mr Frank Statham who retired in June 1981 served 16 years. A total of 31 years from two Directors is an excellent record and shows how people enjoy the lovely state of Western Australia.

### MINISTERS

Some of the Ministers holding the portfolio for the Department's function over the years have been top ranking political figures, particularly in their latter years and subsequent Prime Ministers figure prominently in the list.

The first Minister was Hon. Sir William John Lyne, K.C.M.G. The next Minister was a Western Australian through and through and was the Rt. Hon. Sir John Forrest, P.C., G.C.M.G. later Lord Forrest of Bunbury.

One of the later Ministers for Works matters was the character of the Parliament of the time the Hon. King O'Malley. Works Ministers who later became Prime Ministers were the Rt. Hon. Joseph Cook (later Hon. Sir Joseph Cook P.C., G.C.M.G.) and the Hon Joseph Aloysius Lyons later Sir Joseph Aloysius Lyons.

Other Ministers for Works who became Prime Minister were Sir John McEwen and Senator the Hon. J.G. Gorton.

The Hon. E.G. Whitlam as Prime Minister was Minister for Works for a brief period in 1972.

Other Western Australian members of the Federal Parliament who were Ministers for the Department in recent times were the Hon. Nelson Lemmon and Hon. Gordon Freeth now Sir Gordon Freeth.

There have been 15 permanent heads controlling the Department's activities since federation. The current head is Collin Freeland who was appointed to the position in 1980. The permanent head is now located in the National Capital, Canberra.

When Mr Cook opened the branch office in Perth, the office was located on the sixth floor of the General Post Office building and remained there until November 1954.

The original staff consisted of the Director and an Architect, Mr C.R. Ross. By 1935 the office staff had grown to 6. The Department at its peak in 1973 had a staff of 415 which included some Housing Department officers.

There have been only three Regional office sites in Perth:-

6th Floor, General Post Office Building  
99 Wellington Street, opposite Wellington Square, and  
the present location at Sheraton Court, 207 Adelaide  
Terrace, Perth

### FUNCTIONS

The functions of the Department are laid down in the administrative arrangements issued by the Government. They are brief and to the point and are as follows:-

1. Planning, execution and maintenance of Commonwealth Government Works.
2. Design and maintenance of furniture, furnishings and fittings for the Commonwealth.

Notwithstanding the bravity of the wording of the function they are all embracing and permit the Department to perform a wide scope of works for all Commonwealth Departments, Commissions and Statutory Authorities, other Governments and for Aboriginal Housing Associations and Communities.

The Department in performing its functions relies heavily on private contractors with the use of public tendering to carry out its Capital Works and Maintenance Program. However, the Western Australian Region has a staff of some 350 Direct Labour employees at its disposal to carry out works which are not suited to contract.

The direct labour group are specialist and are used in a number of ways from running the steam raising and maintenance at Hollywood Hospital to the specialist civil construction gang. This group of employees carry out those urgent tasks that arise from time to time and emergent work that results from natural disasters as cyclones, earthquakes, floods and fire.

In providing a service to all Commonwealth Departments and Commissions, the Department of Construction carries out maintenance inspections of all buildings and assets each year and advises its Government clients on all maintenance matters, provides estimates and performs the work.

The Department in the last three years has become heavily involved in providing housing and engineering services for Aboriginal Communities, particularly in the northern part of the State and the Goldfields and Pilbara areas. The works includes the design, erection of various types of housing from the transitional type to sophisticated type housing.

In providing housing for the various Communities, every endeavour is made to utilise the services of Aborigines from within the Community to perform skilled tasks where skilled tradesmen are available, and all those unskilled jobs associated with house building and engineering programs.

#### MAJOR PROJECTS

The Region has been associated with the construction of many major buildings in Perth from the 1920's and early projects were the construction of the General Post Office in Forrest Place, and the adjacent Commonwealth Bank Building.

The Supervising Officer on the construction of the Commonwealth Bank in Forrest Place was Mr R.M. Baxter who later became Director of Works in Western Australia in 1958.

In more recent times the Region has constructed and been associated in providing Headquarters for the A.B.C. This consisted of the original building which now stands in Adelaide Terrace and the more recent extensions. The Commonwealth Centre in St. George's Terrace, next door to the Concert Hall, the Perth Mail Exchange and the Wellington Telephone Exchange, one of the largest buildings of its type in Australia, are also landmarks in Perth.

The construction of the Whaling Station in the early 1950's at Carnarvon was one of the biggest projects undertaken by the Region at that time.

The construction of Perth Airport, Jandakot Airport, Gingin Satellite Base and the Royal Australian Air Force Base at Pearce are all reminders of the Region's role in providing services for the Commonwealth Government in Western Australia.

The most recent establishment constructed by the Department has been H.M.A.S. Stirling and the Causeway leading from Point Peron to Garden Island in Cockburn Sound. These works

commenced in 1971 and were completed in 1978 on schedule to the Government Plan at a cost of \$45M. H.M.A.S. Stirling was commissioned on 28 July 1978.

These projects mentioned above are described fully elsewhere in this history of the Region.

### ORGANISATION

The Department for a long period of time was organised on the basis of separate design cells and construction cells with supporting specialist groups of administrative sections including personnel and accounting.

As the Department's work load grew alarmingly in the mid 1960's, it was recognised that some drastic changes had to be made within the organisation if it was to be able to cope with the massive work load in an efficient and economical manner. After studies by a selected Committee, the Department changed over in the early 1970's to what is now known throughout the world as Project Management. Most large organisations, whether Government or private now use the method of Project Management in performing large works.

Project Management as the name implies, takes projects from their inception at the feasibility stage right through to finality carrying out design, documentation, the calling of tenders and supervising the construction of the work on site to its conclusion.

The Region has three Project Manager Groups which carry out the function of design and construction for all the works performed in Western Australia and those on Cocos Islands for which the Region is responsible.

The Project Manager concept besides being able to cater for large work loads also provides Project Leaders and Design Teams a great deal of satisfaction in seeing the project

throughout to completion rather than the old system where a designer was purely a designer and seldom had the opportunity of being involved in the construction phase.

The Project Manager concept is supported by a specialist Technical Service Group whose function is to investigate and report on technical matters of all natures.

The Region also has a General Works Manager who is responsible for and performs the majority of maintenance works in the Region and carries out the smaller capital works. The General Works Manager's role includes carrying out the day-to-day maintenance tasks that arise in all Commonwealth Government establishments. These groups are supported by the Management Services comprising personnel, manpower and finance. Details of these services are found in other sections of this publication.

It can be gleaned from this brief history that the Region has greatly expanded and come a long way since its inception in the 1920's.

R.E. BALLANTINE

## 2.2 DEPOTS

As the Department of Housing and Construction has had a multitude of names since its inception, and will undoubtedly change its name many times in the future, it appears appropriate in this history of Depots to refer only to the Department's most popular, and meaningful name, namely the Department of Works.

There appear to be three phases in Departmental construction in this state, namely:-

- (a) The Pre-World War II Era
- (b) Post World War II
- (c) The Statham Era

With the distinct possibility that the Department of Works history will repeat itself in the future, these notes on Depots may assist in avoiding the pits we have fallen into in the past.

### (A) PRE-WORLD WAR II

Prior to World War II, there only appear to have been two Depots for the Department of Works. These Depots were located at Bullsbrook and Newcastle Street. The facilities at these Depots were extremely limited, but whereas the Bullsbrook Depot was established to carry out maintenance work in the 'Pearce Area', the Forbes Street-Newcastle Street Depot could be mainly classed as an emergency Depot, for works considered to be urgent in the Metropolitan area.

The information available on the Bullsbrook Depot is extremely meagre and all that can be said is that it existed, and was the forerunner to future Depots at Pearce.

The Newcastle Street Depot, was obviously the forerunner of post War Forbes Street Depot, and it consisted of a small

area to stack timber and a shed. The only vehicle attached to the Depot was a thirty hundred weight truck.

(8) POST WORLD WAR II - DEPOTS

In retrospect the depots leased, borrowed or constructed in this era can be classed as depots of necessity based on short sighted economy and with little thought given to their ultimate usage.

(1) Pearce RAAF - Depot

Major runway construction work commenced at Pearce Airfield in 1952. The number of men working on this project at times grew to at least 350 and the depot amounted to a collection of temporary buildings with some workshop facilities shared by the Department of Works and the Barracks Officers.

In 1963, arrangements were made with RAAF for the Department of Works to have a separate depot. The new depot consisted generally of buildings relocated from other portions of the base on the best available site. Many of these buildings were temporary buildings converted to suit depot requirements. This depot with some extensions and modifications remained until 1973.

(2) Forbes Street Store (1945-1976)

The Forbes Street Store and City Maintenance Depot was located on two acres of land on the fringe of the City of Perth in Newcastle Street close to William Street. The building consisted of a number of separate buildings mainly of timber and steel frame construction clad with asbestos cement sheeting and corrugated iron.



They were constructed around 1945. The area was used to house Stores (except administration staff who were located at Bennett Street), City Maintenance Depot and Testing Laboratory. Several extensions were made to the building during the 31 years the Department had control of the area. In 1965, additions were constructed to the Furniture Store which was converted into a joiners shop. This was the first such major works project carried out by our Day Labour.

(3) Subiaco Plant Workshops

The Plant workshops were situated on 2½ acres leased from the State Railways in the light industrial area at Subiaco. The workshop and servicing facilities were in a number of timber and steel framed buildings, which were erected in 1948. There was a large open sided under cover area where plant undergoing repairs was held. In 1965, additions were constructed to the buildings to allow a spare parts area and improvements to amenities areas. The workshops acted as a base station for our mobile radio.

(4) Hollywood Repatriation Hospital Depot

This depot came into being shortly after the Second World War and it consisted of part of an old Army store, a workshop and shared amenities with the Repatriation Department. This department of Works Depot has a history more or less identical with Pearce in regard to the minor modifications up to 1963 and the planning of the modern depot after 1963.

(5) Leeuwin Navy Depot

Once again this depot started in an old wooden shed owned by the Department of Navy and increased in size as the base maintenance requirements become more necessary. The sub-standard buildings occupied by the Department of Works eventually had to be pulled down to make way for a new galley. The old depot at Leeuwin also catered for the Army maintenance requirements at Swanbourne and Karrakatta.

(6) Soils Laboratory - Depot

The soil testing laboratory became necessary when major aircraft runways were being constructed. It was originally located in a tin shed by the side of the Brisbane Street Post Office. In 1958 it was relocated at Forbes Street store where it remained in a temporary premises until 1968.

(7) Other Depots of this Era

Small Department of Works depots were also created at Northam, Merredin and Broome. The Merredin Depot was created to cope with RAAF and Army maintenance requirements in the RAAF complex at Merredin and Army Ordnance Stores at Nungarin and was located in a building owned by RAAF. The Northam depot at Holden camp was required for operational and general maintenance associated with a Commonwealth camp for displaced persons and the depot was a temporary building in the camp. The Broome depot was required because of the large volume of aerodrome work in the Broome-Derby area and Department construction and maintenance of Commonwealth buildings and housing in the

North West. An existing complex was used for the Broome depot. These three depots were closed by the mid 1950's.

(C) The Statham Era

The depots created at this time were planned for the Department of Works requirements in the then foreseeable future. They were all well equipped and oriented in the direction of construction economy. The need to reduce the Departmental Day Labour force is now starting to affect the economy of these depots and future Government policies will point to the wisdom of these decisions long term.

(1) Present Leeuwin Navy Depot

This depot was completed in 1966 at a cost of \$20,479. The depot is a small well equipped area which handles the operational and day-to-day maintenance of H.M.A.S. Leeuwin and generally supplies the personnel to carry out selected maintenance work in the South West area of this state. The depot is located on Navy property and will probably be the first depot affected if the current policy on day labour continues.

(2) Swanbourne Army Depot

This is a well equipped spacious depot built on Army land. The depot was completed in 1968 at an approximate cost of \$29,000. Depot personnel handle the maintenance and operational requirements at the Army complexes of Swanbourne and Karrakatta and the day-to-day and operational requirements for C.S.I.R.O. at their Floreat Park Laboratories.

(3) Present Pearce RAAF Depot

This depot was completed in 1973 at a cost of \$285,627. The depot is also a spacious well equipped depot suitable for the carrying out of day-to-day and operational requirements at the RAAF bases of Pearce, Gingin and Caversham and the Army base and Bindoon.

(4) New Material Testing Laboratory

The new material testing laboratory was completed in 1968 at a cost of \$25,550. The building is brick and steel construction and located alongside residential houses in the suburb of Rivervale. If additional material testing was required over and above the present commitment, it would be necessary to resite this laboratory at Kewdale.

(5) Replanned Hollywood Repatriation Depot

During the period 1963-1967, the Department built a paint store, refrigeration maintenance workshop, mechanical, electrical, plumbing and carpentry workshops, and an amenities area. This depot services the day-to-day requirements of the Hollywood Repatriation General Hospital, Edward Millen Hospital Victoria Park and the Cottlesloe Analytical Laboratory. The cost of these depot improvements was \$75,605.

(6) Kewdale Complex

This depot was completed in 1975 at a cost of \$1,255,378. The depot is located on an area of 4.79 hectares in Orrong Road, Welshpool. This complex was provided to enable the Department of Works to centralise and bring together existing scattered sub-standard and over-crowded

stores, workshops and Day Labour facilities into a permanent depot, located in a properly planned modern industrial estate, that has been established some five miles from the centre of Perth by the Western Australian Government at the core of the State's road, rail and air transport network. Following the completion of this depot, the Forbes Street-Newcastle Street Depot and the Plant Workshops at Wembley were disposed of. The staff from the above two depots were transferred to Kewdale and the Stores Administrative Staff were transferred from Sheraton Court, Perth to Kewdale Depot. The overall planning of the Kewdale Depot also made provisions for the possible relocation of the Rivervale Materials Laboratory to Kewdale Depot if this action was ever deemed necessary.

(7) H.M.A.S. Stirling Depot - Garden Island

This depot was completed in 1974 at a cost of \$108,000. It was arranged as a small version of the Pearce Depot and provision was made for Plant, Plumbers, Fitters, Electricians, Carpenters and Painters workshops together with suitable accommodation for Administrative Staff. This Depot has been set up to carry out maintenance requirements for H.M.A.S. Stirling Base and Navy housing in Rockingham area.

(8) Learmonth Depot

This small well equipped depot and project store came into being during the period that the Fifth Airfield Construction Squadron was carrying out a major reconstruction of the Airfield at Learmonth. The depot was completed in 1972. The depot is utilised for the maintenance requirements of Learmonth Airfield, and the small five-man depot

staff also maintain Navy houses at Exmouth for Australian Navy personnel attached to the Harold Holt American Navy facility and other substantial Commonwealth assets in the area.

(9) Cocos (Keeling) Islands

The role of the Department at Cocos Islands is discussed in another chapter. Until a new depot is built we continue to use former Department of Civil Aviation facilities.

COLIN McWHAE

### 3.1 STAFF HISTORY

#### 3.1 WESTERN AUSTRALIA REGIONAL DIRECTORS

##### GEORGE SYDNEY COOK

Mr G.S. Cook arrived in Perth on 27 March 1925 and took up his appointment as Works Director on 30 March 1925, thus relieving the Works Registrar of his duties.

From 15 July 1926, Mr Cook undertook a 19 day tour (by ship) of inspection in the North West. The tour was primarily to obtain firsthand knowledge of the conditions of postal and customs buildings, however Mr Cook was particularly interested in Broome as the construction of a Quarantine Station was to commence there during 1927.

In April 1930, Mr Cook received approval to use his private vehicle for official business. Two known specific journeys made by Mr Cook were:-

- (i) an inspection of roads adjacent to the Woodman's Point Quarantine Station in the company of the Fremantle Road Board Secretary and the Chief Quarantine Officer; and
- (ii) a visit to the proposed Jandakot Flying Ship area.

Early in 1930 Mr Cook requested architectural assistance for the Commonwealth Bank building project, that is, preparation of detail drawings, advice to contractors, ensuring the facade of the bank would harmonise with the adjoining General Post Office building. The completed cost of the project was valued at approximately £250,000.

On 21 May 1930, an architect, Mr R.M. Baxter, came to Perth from Canberra on temporary transfer for approximately 3 years to provide this assistance. In January 1932, the Secretary

gave approval for Mr Baxter to be given the title of Architect-in-Charge of the Perth Bank Work. As such, he was given complete control over design, construction and supervision of the project, responsible solely to the Director, Mr G.S. Cook, and he was given right of access through the Director to Central Office on technical matters associated with the design and construction.

Mr Baxter ceased duty in Western Australia on 10 May 1953 and proceeded to Canberra. (He again returned to Perth on transfer in 1958, however on this occasion as Director of Works).

In June 1935, the position of Works Director was reclassified from £636-708 to £660-732. Mr Cook was promoted and confirmed at this level on 4 July 1935.

On 27 December 1939, Mr Cook met with Mr Jackson, Surveyor-General, of Canberra to discuss the alterations to D & Murray's Building, that is, alterations for the Taxation Department.

Mr Cook was promoted and confirmed as Works Director, Sydney, on 16 November 1939. He departed Perth on 30 January 1940.

Mr H.B. Sturtevant succeeded Mr Cook.



HAROLD BERESFORD STURTEVANT - A.R.A.I.A.

Mr H.B. Sturtevant, born on 16 April 1886, was an Associate of the Royal Australian Institute of Architects. He commenced with the Department (then known as Home Affairs) on 27 July 1914, working in the Sydney Office.

On 23 January 1940 Mr Sturtevant commenced duty in the Perth Office as Works Director.

The Prime Minister, J. Curtin, invited Mr Sturtevant on 26 July 1940, to act as a member of the W.A. Industry Expansion Commission, representing the Commonwealth Government. Approval was given for him to participate.

The Commission was appointed to:-

- . advise the Commonwealth Government on measures necessary to ensure the fullest use of West Australian industrial resources for war and other national purposes; and
- . submit to the Commonwealth Government specific proposals for such industrial development as is necessary for this purpose.

Mr Sturtevant attended a Commission meeting in Canberra in February 1943.

From 24 July 1944 to 3 August 1944, Mr Sturtevant travelled in the North West to inspect stations in the area. His itinerary included visits to Carnarvon, Exmouth, Yauray, Onslow, Roebourne, Port Hedland, Marble Bar, Corunna Downs, Broome, Derby, Noonkanbah, Fitzroy Crossing, Halls Creek and Wyndham. He travelled by Allied Works Council aircraft.

In October 1944, Mr Sturtevant attended an Allied Works Council Executive Officers conference in Melbourne.

Mr Sturtevant collapsed and died on 31 March 1950. He was succeeded by Mr L.C. Lucas.

LEONARD CUTHBERT LUCAS - D.S.O., O.B.E., M.C., V.D., A.R.A.I.A.

Mr L.C. Lucas, born on 6 November 1894, was re-appointed to the Department in 1946 following war service. He commenced on 11 July 1946 as Works Director, Darwin.

On 8 June 1950 Mr Lucas was promoted as Director of Works, Perth and he took up duty on 1 August 1950.

The position of Director of Works was reclassified in 1951 from £1614-1800 to £1862-2048. Mr Lucas was promoted and confirmed at this level on 20 September 1951. At this time the following positions were also reclassified: Principal Engineer; Principal Architect; Plant Engineer and Superintendent of Construction which became known as Construction Manager.

From 26 January 1953 until 3 November 1953, Mr Lucas was seconded to the Department of Supply. During this period he was required to travel overseas and he was involved with atomic tests at Emu Field.

Mr Lucas elected to retire on 17 October 1957. He proceeded on recreation leave on 26 September 1957 until his retirement became effective.

Mr Lucas was renowned for his biblical quotes and on the occasion of his retirement he sent the following message to the Secretary: Luke 2; Verse 29 - which reads "Lord, now lettest thou thy servant depart in peace, according to thy word."

He was succeeded by Mr G.D.B. Maunder.

GEORGE DOUGLAS BENNETT MAUNDER - C.B.E., B.E., B.Econ,  
M.I.E. (Aust)

Mr Maunder joined the Department in 1946 as the N.S.W. Chief Engineer after service with the R.A.A.F. during World War II. In 1950 he was appointed N.S.W. Superintendent of Construction and in 1951 N.S.W. Construction Manager. From 1956 to 1958 he held the positions of Victoria/Tasmania Assistant Director of Works, A.C.T. Assistant Director of Works, Northern Territory Director of Works and Western Australia Director of Works from 22 October 1957 until 24 April 1958.

He was appointed A.C.T. Director of Works in 1958 and remained in that position until his appointment as Director-General in February 1964. He held this position until ill-health forced his retirement in August 1967.

During his 21 years service he contributed to many major projects of national importance - particularly during his term as Director-General.

Mr Maunder represented the Commonwealth on several important bodies including member and past chairman of the National Association of Australian Road Authorities, Deputy Commonwealth Commissioner of the River Murray Commission, Member of the Snowy Mountains Council, and Member and past chairman of the Australian Road Research Board.

He had been awarded an O.B.E. (Military Division) in 1945 and was further honoured with the award of Commander of the Order of the British Empire in 1967.

He took a particular interest in social club activities and he is remembered today by the Maunder Cup which has been donated for competition in golf between Regional Offices.

ROBERT MICHAEL BAXTER - F.R.A.I.A., A.R.I.S.A., DIP.ARCH (LONDON)

Mr Baxter received his early architectural education in Glasgow and during his training he gained many honours, he was an Atkinson Prizeman in Building Construction. He enjoyed a very high reputation in his profession.

His experience included periods in England, Ireland and Australia. He was admitted to the Royal Institutes of Architects in Britain, Victoria and Australia. Mr Baxter's departmental tasks involved many important national projects, particularly during World War II.

In 1930 Mr Baxter was seconded as Architect-in-Charge of the construction of the Commonwealth Bank, Forrest Place.

He occupied the positions of N.S.W. Principal Architect from 1946 until 1947, Assistant Director of Works, N.S.W. from 1947 until 1950, and again 1951, Director of Works, Western Australia from 12 June 1958 until 3 March 1961, and Director of Works, N.S.W. from 1961 until 15 April 1963 at which time he retired at age 65 - after approximately 34 years service.

Major projects undertaken by the W.A. Region during his term of Director include the Commonwealth Offices at William Street and the Commonwealth Bank in Hay Street.

His departmental service represented a great contribution to the Department's work.

FRANK VIDGEN - I.S.O., B.E., A.M.I.E. (Aust)

Mr Vidgen graduated from the University of Queensland with honours in Civil Engineering in 1931 and worked with the Queensland Main Roads Department from 1933 until 1941.

During World War II he served with the Royal Australian Engineers and was posted in Papua New Guinea. In 1942 he travelled by boat, canoe and on foot to carry out reconnaissance for a road across the Owen Stanley Range - this exploit gained him a place in the official war history.

He rejoined the Queensland Main Roads Department and continued there until he commenced with this Department as Controller of Works for P.N.G. in 1947. He was appointed Assistant Director, Queensland Region in 1950, Director of the Northern Region in 1951, Director of P.N.G. in 1955, Director of Western Australia Region from 5 February 1962 until 9 May 1963 and returned to Queensland as Director in 1963. He retained this position until his retirement in 1974.

Major projects undertaken by the W.A. Region during his term of Director include provision of the N.A.S.A. satellite tracking station at Carnarvon, reconstruction and extension of Perth Airport and construction of the A.B.C. Office Block and Broadcasting Studio.

Whilst located in the Northern Territory, Mr Vidgen was an official member of the Legislative Council for 3 years. He was awarded the Imperial Service Order in 1972 in recognition of his 24 years service with the Department.

RONALD ALBERT THOMAS LEDGER - F.R.A.I.A.

Mr Ledger, born on 29 February 1904, commenced his architectural career in 1919 with the firm Hobbs, Smith and Forbes as a Junior Draftsman. He gained his qualification at the University of Western Australia. In 1925, he joined the Workers' House Board as a Draftsman. From 1930 until 1932 he worked for private firms as an Architect and in 1932 he joined the Public Works Department where he gained the reputation as a specialist in domestic architecture.

Mr Ledger commenced within the Department as a temporary Architect on 29 April 1935 and was engaged on a variety of projects including Post Offices, Customs Quarters and Commonwealth Banks. From 1937 he was the Senior Architect for Defence works including barracks, workshops, armament depots and Army camps. He had a major involvement with the design and development of the then Military Hospital at Hollywood. Mr Ledger was appointed as Senior Architect in 1946 and he provided relief as Principal Architect when necessary until he was promoted to the position in 1950. He continued in this position until 18 March 1958, when he proceeded to Papua New Guinea on temporary transfer as Assistant Director for that Region. He acted in this position until 10 April 1961, when he returned to Perth and acted as Director until Mr F. Vidgen took up his posting in February 1962.

Mr Leger was promoted as Director of Works, Perth on 26 September 1963, the first and only West Australian to hold this position. The position was reclassified in 1964 and he continued to occupy it until his retirement on 12 April 1965.

Major projects undertaken by the W.A. Region during his term as Director include the 'Irwin' Telephone Exchange, A.B.C. Transmitter Building at Bunbury, Barrack Block at H.M.A.S. Leeuwin and work commenced on the C.S.I.R.O Laboratory Building.

He was succeeded by Mr F.W. Statham.

FRANCIS WEST STATHAM - O.B.E., E.D., F.I.E. (Aust)

Mr Statham completed his engineering qualification at the Sydney Technical College. His early experience was gained at the British Australian Tobacco Co. Group and it includes a fitting and turning apprenticeship, design drafting, machine design, factory layouts and planning and development.

In 1939 Mr Statham enlisted in the A.I.F. He served in the Middle East (including the Tobruk siege as Commander of the Electrical and Mechanical Engineers of the Fortress) and in the South-West Pacific Area. He was discharged in 1945 with the rank of Lieutenant-Colonel and awarded the O.B.E. (Military Division). He returned to the British Australian Tobacco Co. and remained with them until 1950 at which time he held the position of Chief Engineer of their Melbourne manufacturing establishments. Mr Statham then became General Manager of Standard Steel Pty. Ltd.

Mr Statham joined this Department on 2 February 1953 as Chief Plant Engineer in Central Office, Melbourne. This position was reclassified in 1962 and accordingly Mr Statham was promoted. He continued to hold the position of Assistant Director-General (Plant and Workshops) until his official transfer as Director of the W.A. Region on 13 April 1965. The position was reclassified to Level 3 status in 1970. Mr Statham was promoted to it and remained Director until his retirement on 24 June 1981. On two occasions, firstly in 1974, and again immediately following Cyclone Tracy in 1975, Mr Statham acted as Deputy Secretary in Central Office. In 1970, he was granted the N.A.S.A. Apollo Achievement Award in recognition of his work connected with the establishment of a tracking station at Carnarvon.

During his term as Director, the Region experienced enormous growth in expenditure and staffing, e.g.:-

	<u>Expenditure (Actual)</u>	<u>Staff (Av)</u>	<u>Day Labour (Av)</u>
1964/65	\$5.47M	157	227
1975/76	\$31.06M	396	410
1980/81 (est)	\$42M	336	322

From 1975/76 onward staffing activities were curtailed considerably as a result of Government policies in respect of work to be undertaken by the Department, i.e. 60-65% in-house with the remainder going to consultants, and stringent staffing ceilings. Other significant Regional changes which occurred were firstly, the relocation of the Office from Wellington Street to the Sheraton Court early in 1973, and secondly, the introduction of the project management concept in 1974.

Major projects which were undertaken by the Region during Mr Statham's term as Director included the C.S.I.R.O. Regional Laboratory (\$1.25M), Swanbourne Army Barracks (\$3.3M), Commonwealth Centre (\$6.4M), development of the Learmonth airfield (\$14M), Reserve Bank (\$7.6M), Mail Exchange (\$2.8M), Cockburn Sound Causeway (\$9.5M), Pearce RAAF Base development and expansion (\$5.5M), HMAS Stirling Naval Facility (\$50M), Wellington Telephone Exchange (\$22.6M) which received the 1978 Architectural Design Award Certificate of R.A.I.A. (WA Chapter), Quarantine Station at Cocos (Keeling) Islands (\$5.9M) and construction of the Telecom State Headquarters building (\$11.4M) had commenced.

URSULA BOSWARD



### 3.2 IN RETROSPECT

by R.A. LEDGER - DIRECTOR 26.9.63 to 12.4.65

Before the Commonwealth Government established its own works organisation in Western Australia, the State Government's Public Works Department was its construction authority and a number of the buildings erected were associated with the early development of the State, some prior to the advent of Federation in 1901.

During the flourishing gold mining era some of the more palatial and historic official buildings - still standing - were erected at Kalgoorlie, Coolgardie, Cue, Mt. Magnet and other centres, whilst a telegraphic station was built at Eucla.

Similarly, in the main provincial towns of Albany, Bunbury, Northam and Geraldton and the more remote centres of the State, buildings were provided for the P.M.G., Customs and other Commonwealth Departments, some of which also included facilities for State Government activities such as law courts and mines registrars' offices. One of the oldest buildings in Fremantle still standing is the original Post Office in Cliff Street. Later this was replaced by a new building in High Street, the old one being occupied by the Department of Navy up to the time of its transfer at Preston Point, Fremantle.

The largest structure erected was the General Post Office in Forrest Place, Perth, where the driving of its pile foundations was commenced just prior to the commencement of World War I in 1914. It is thought that at the time of its completion in 1921, the Commonwealth Works Western Australia Branch was established on the sixth floor of the building and Major G.S. Cook opened the office with one architect, seconded from the Public Works Department, and who had been the supervising architect on the General Post Office building (Mr C.R. Ross).

The Commonwealth Bank building in Forrest Place was built during this period and Mr R.M. Baxter (later Works Director for New South Wales and Western Australia) came from Head Office to be resident architect for the project.

By 1935 technical staff had increased to four architects and an engineer but one architect (G. Royle), although still under Major Cook, was loaned to the Department of Civil Aviation as inspector of country aerodromes.

At that time, 1935-1938, the organisation was known as the Works and Services Branch of the Department of Interior, followed by Commonwealth Department of Works with a further expanded staff as depicted in the attached photograph taken prior to Major Cook's transfer to New South Wales as Works Director.

The year 1937 saw the commencement of defence works for the three Service Departments and set the program of works for the following period prior to and during the Second World War. In addition to the Department's own war effort, most of Perth's practising architects, engineers and builders were employed either directly or indirectly by the Department to assist with these works which were carried out under - again a new title - the Allied Works Council.

Many high priority projects were carried out during the period 1937-1945 for the three War Service Departments, some being:-

Navy : H.M.A.S. Leeuwin, Training Depot, Fremantle and  
Armament Depot, Byford

Airforce : Pearce R.A.A.F. Base

Army : Coastal defence works comprising gun installations at Rottnest Island and the mainland.

Training camps at Northam and other centres.

Drill Halls, Karrakatta.

Extensions, Swan Barracks.

Army hospitals (110 A.G.H.) Hollywood.

Army hospitals (109 A.G.H.) Northam.

Ammunition Depot, Welshpool.

This resume covers only briefly early beginnings of Commonwealth Public Works in Western Australia, the post war period being another story. Suffice to say that it entailed the commencement of large civil works projects which had been retarded because of concentration of defence works.

To help cope with the post war programs additional technical staff was recruited from the United Kingdom and even prefabricated buildings were imported to provide temporary facilities for some Departments.

#### Some Anecdotes and Job Incidents

At Swanbourne when Army personnel was assembling its 6" guns on the newly constructed concrete emplacements, one of the weapons would not turn its full 360° circle but only half of its arc which encompassed the City. Apparently, the concrete base had moved out of centre during pouring. However, by frantic and laborious hacking away of concrete the threat to the City was eliminated, allowing the gun to point in its correct arc seawards.

At Fremantle a ship carrying cable for the harbour boom arrived one weekend early in the war and it had to be unloaded

on the Saturday morning. Our day labour people had this difficult job to do. The cable had to be unwound from the ship and passed over the roofs of wharf sheds by a 'flying fox' device and rewound in the boom store building. One of the day labour chaps - a most conscientious type but a bit rough with the King's English, commented afterwards: "Aw, we got it done oright but we didn't 'ave enough facilities for doin' the job".

Again the day labour team had the job of installing foundations and erecting a transmitting mast at Minding (near Wagin) for the A.B.C. They were camped on the site for several weeks without a break and when the foreman phoned one day to ask our Engineering Supervisor if the married men could have their wives visit them in the weekends, the reply from this rather rigid, sense of humour lacking gentleman was "There will be no women on that job in any shape or form!"

In Perth When the design of the Repatriation Building was underway, some local political pressure was applied to use Donnybrook stone for the facades of the building, but when the building was under construction there was only enough stone to clad the lower wing, the reason being that the Quarry had been exhausted. Hurried arrangements had to be made to ship Bondi stone from Sydney to complete the project.

However, some time later when additions were made to the State Parliament House, adequate supplies of Donnybrook stone were produced.

### 3.3 REGIONAL STAFF

Until December 1974, the Regional organisation was divided into the following Branches:-

- . Executive
- . Design Branch
- . Construction Branch
- . Administration Branch

The typical Branch Organisation is shown on the attached chart.

In December 1974, project management was formally introduced resulting in the following changed Regional organisation (chart attached):-

- . Projects Division
- . Technical Services Division
- . General Works Division
- . Management Services Division

As a result, several designations and classifications were altered or were introduced and these are reflected in the listings of Regional staff.

URSULA BOSWARD

## LISTING OF WESTERN AUSTRALIA REGIONAL STAFF

### Regional Director

G.S.	Cook	1925 - 1940
H.B.	Sturtevant	1940 - 1950
L.C.	Lucas	1950 - 1957
G.D.B.	Maunder	1957 - 1958
R.M.	Baxter	1958 - 1961
F.G.	Vidgen	1962 - 1963
R.A.T.	Ledger	1963 - 1965
F.W.	Statham	1965 - 1981

### Associate Director (Projects)

R.H.	Kennedy	1970 - 1979
F.J.	Buchanan	1979 -

(Formerly titled Assistant Director (Technical) until 1974)

### Construction Manager

O.A.	Beattie	1946 - 1955
R.D.	Cooper	1955 - 1965
F.J.	Buchanan	1965 - 1970
L.	Fenton	1970 - 1974

(Formerly titled Superintendent of Construction until 1951, the position ceased to exist with the introduction of project management in 1974).

### Principal Engineer

P.J.	Avery	1946 - 1951
J.H.	Utting	1951 - 1974

(Position ceased to exist with the introduction of project management in 1974).

### Principal Architect

M.	Finlayson	1946 - 1950
R.A.T.	Ledger	1950 - 1958
S.H.	Bedford	1958 - 1965
A.D.	Richards	1965 - 1970
R.G.	Sercombe	1970 - 1974
B.J.	Davis	1974 - 1975
J.	Pickering	1975 -

(Position professional Class 5 until 1974, thereafter Class 4 level).

### Project Manager 1

L.	Fenton	1974 - 1978
E.H.	Cartwright	1979 -

(Formerly titled Project Manager (Civil) until 1979).

### Project Manager 2

F.V.	Rennie	1974 -
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(Formerly titled Project Manager (Defence) until 1979).

### Project Manager 3

F.J.	Buchanan	1970 - 1979
K.V.	Wylie	1979 -

(Formerly titled Project Manager (Support Facility until 1979).

### Resources Manager

R.G.	Sercombe	1973 - 1974 (as Principal Architect)
K.V.	Wylie	1974 - 1978
H.T.	Ryan	1978 -

### Technical Services Manager

J.H.	Utting	1974 - 1975
R.C.	Hilton	1975 -

### General Works Manager

C.	McWhae	1974 -
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### General Maintenance Officer

E.W.	Stoddart	1946 - 1959
T.E.	Robinson	1960 - 1962
A.B.	Braund	1967 - 1980

### Principal Civil Engineer

W.M.	Herbert	(S.C.E.)	1946 - 1954
L.J.	Fenton	(S.C.E.)	1954 - 1958
F.J.	Buchanan	(S.C.E.)	1958
P.W.	Cann	(S.A.E.)	1949 - 1958
F.J.	Buchanan	(S.R.A.E.)	1958 - 1965
R.W.	Amess	(S.R.A.E.)	1966
R.C.	Hilton	(S.R.A.E.)	1966 - 1974
M.J.	Dennett	(P.C.E.)	1974 -

(Initially titled Senior Civil Engineer and then Supervising Engineer (Roads and Aerodromes) until 1974).

#### Principal Electrical Engineer

W.M.	Telford	1947 - 1962
K.V.	Wylie	1963 - 1971
E.J.	Lauri	1971 - 1977
A.H.R.	Odlum	1977 - 1981

(Formerly titled Supervising Engineer (Electrical) until 1974 and reclassified to professional Class 4 at that time).

#### Principal Mechanical Engineer

W.R.	Moir	1946 - 1947
W.P.	Cocking	1947 - 1956
R.H.	Thomas	1956 - 1960
W.B.	Gilbert	1960 - 1978
H.T.	Ryan	1978
C.A.	Bagley	1979 -

(Formerly titled Supervising Engineer (Mechanical) until 1974 and reclassified to professional Class 4 at that time).

#### Principal Structural Engineer

D.T.	Skewes	1959 - 1969
A.G.	Clarke	1969 -

(Formerly titled Supervising Engineer (Structural) until 1974).

#### Supervising Quantity Surveyor

J.A.	Kingston	1947 - 1955
E.C.	Foss	1955 - 1973
P.A.	Crowdy	1973 -

(Formerly titled Senior Quantity Surveyor until 1974. Reclassified to Class 4 level in 1969).

#### Supervising Engineer Construction

P.W.	Cann	1948 - 1949
R.D.	Cooper	1949 - 1955
R.H.	Kennedy	1955 - 1962
L.	Fenton	1962 - 1970
C.	McWhae	1970 - 1974

(Position ceased to exist with the introduction of project management in 1974).

#### Supervising Architect Construction

T.W.	Holmes	1949 -
R.M.	Kilpin	- 1967
F.V.	Rennie	1967 - 1974

(Position ceased to exist with the introduction of project management in 1974).



Assistant Director (Management Services)

W.H. Robinson	1946 - 1949
R.C.V. MacIntyre	1949 - 1966
J.P. Evans	1966 -

(Titled Accountant and Administrative Officer from 1951 until 1960, then Executive Officer until the introduction of the present title in 1971. Position was reclassified to Class 10 level in 1967).

Executive Officer (Projects)

F.C. Beard	1949 - 1954
A. Margaria	1954 - 1967
M.S. Hannigan	1967 - 1976
R.E. Ballantine	1976 -

(Initially titled Senior Clerk until 1960, then Administrative Officer until 1971, when changed to Executive Officer (Design and Construction) and again changed to present title in 1974 with the introduction of project management).

Executive Officer (Finance)

M.S. Hannigan	1976 -
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(Position introduced at Class 8 level with project management).

Accountant

J.F. Sweeney	1947 - 1955
J.P. Evans	1956 - 1964
M.S. Hannigan	1965 - 1967
K.F. Fahey	1967 - 1977
A.H. Foster	1977 -

(Initially Assistant Accountant to Accountant and Administrative Officer. Reclassified to Accountant in 1960).

Senior Inspector Manpower

B.L. Irvine	1976 - 1977
U.M.L. Bosward	1977 -

(Position introduced with project management).

Senior Inspector Systems

J.H. Dowling	1978 -
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#### Executive Officer (Contracts)

R.J.	Larsen	1948 - 1958
E.W.	Saleeba	1958 - 1965
J.J.	Chandler	1965 - 1979
S.V.	Taylor	1979 -

#### Supply Manager

J.L.	Robson	1946 - 1948
G.N.	Rosenberg	1950 - 1951
H.D.T.	Way	1951 - 1957
K.F.	Fahey	1957 - 1967
C.E.	Everett	1967 -

(Formerly titled Superintendent of Stores until 1978).

#### Senior Internal Auditor

J.R.	Miles	1948 - 1953
J.P.	Evans	1953 - 1955
E.W.	Saleeba	1956 - 1958
B.L.	Irvine	1958 - 1960
A.H.	Foster	1960 - 1967
K.F.	Fahey	1969 - 1971
M.F.	Crowe	1971 - 1974
A.H.	Foster	1974 - 1975
G.N.	Nash	1975 - 1977
R.L.	Hopkins	1977 -

#### Typist Supervisor

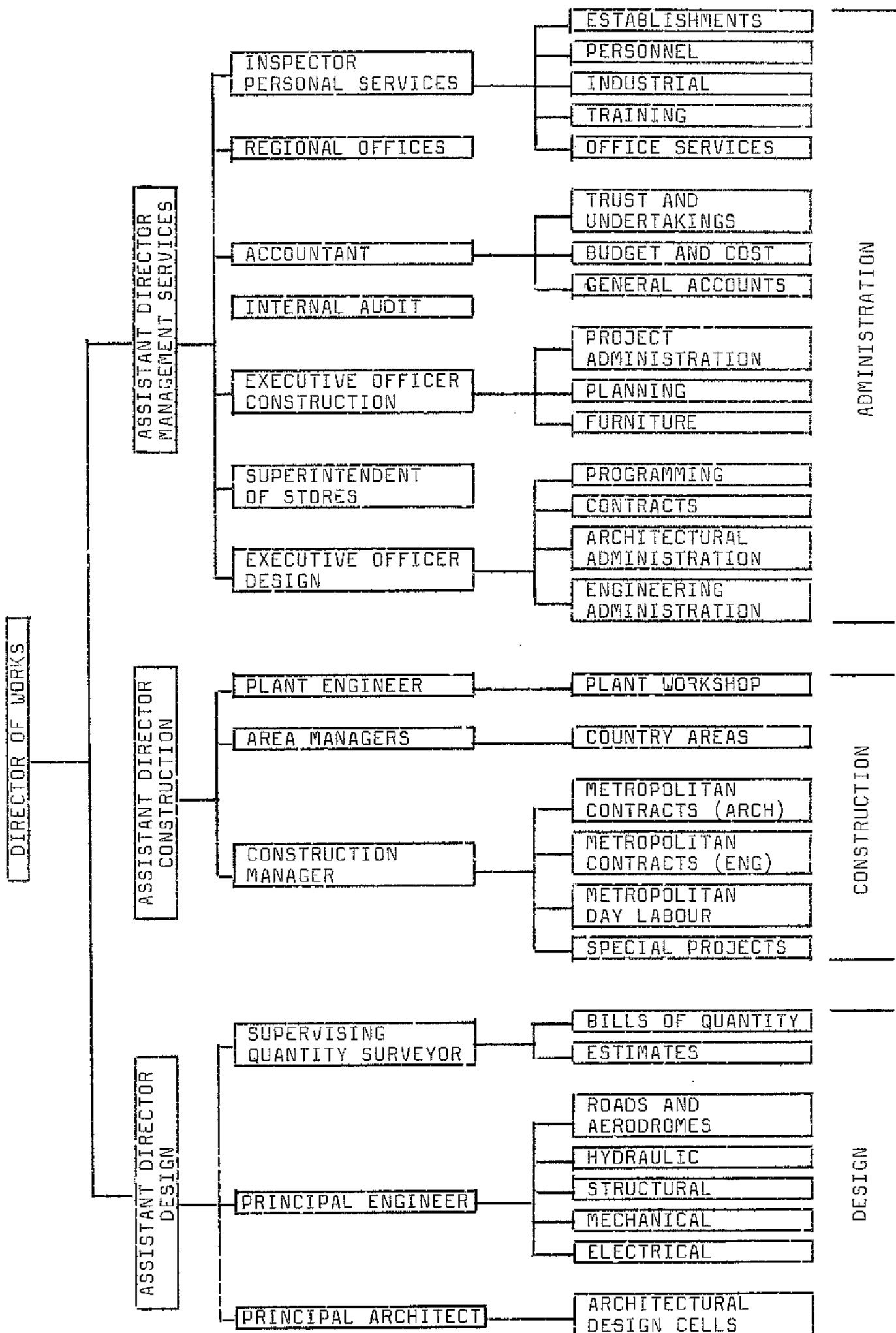
A.	Gibson	1949 - 1950
B.	Marshall	1950 - 1954
D.M.	Letcher	1955 - 1964
J.R.	Allen	1965 - 1971
B.M.	Lee	1971 - 1972
S.M.	Bickerton	1972 - 1979
C.M.	McIntosh	1979 - 1980
D.E.	Southwell	1980 -

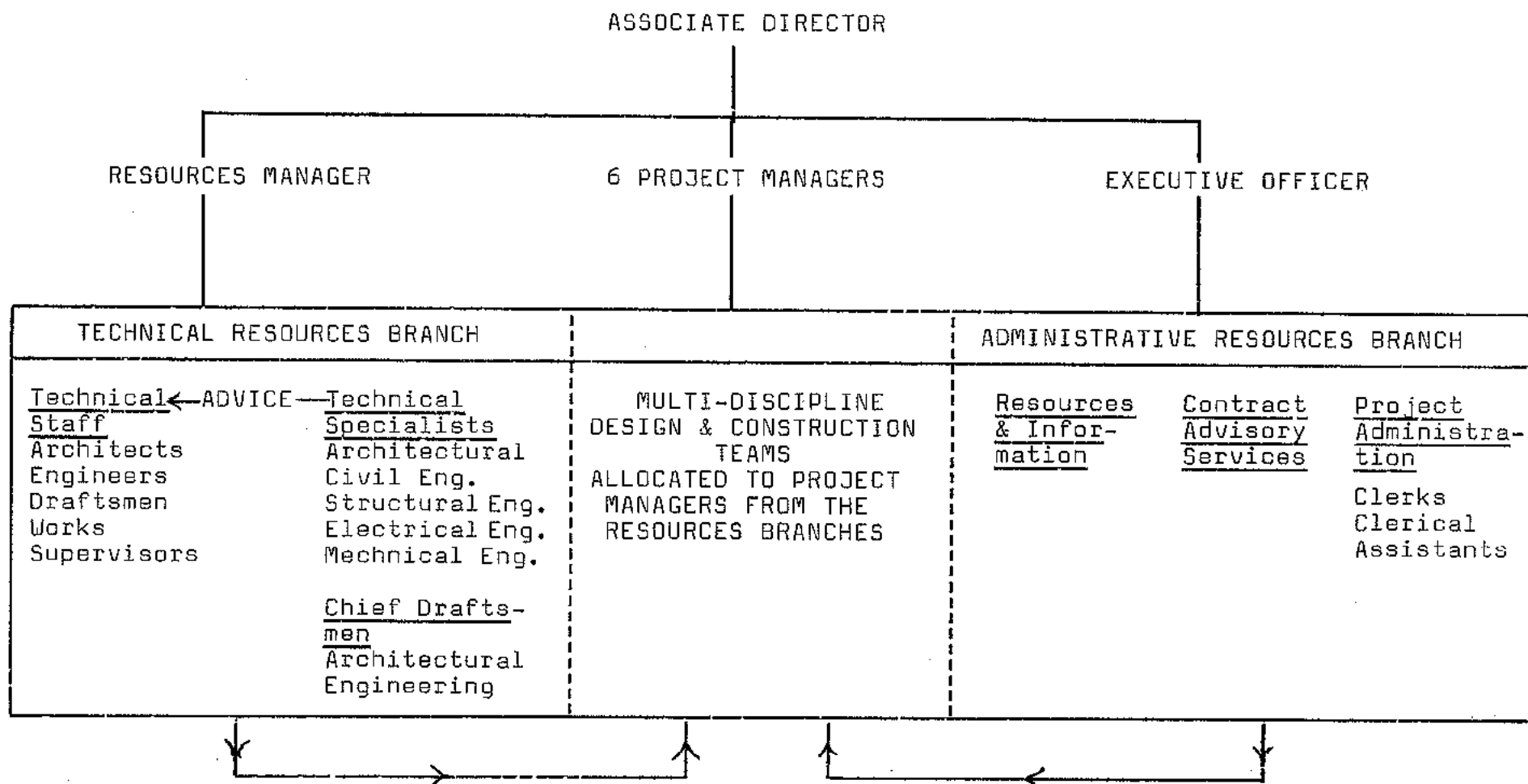
#### Accounting Machinist Supervisor

T.M.	Callaghan	1947 - 1963
S.	Gledich	1963 - 1966
M.	Moore	1966 - 1976
S.	Mutavdzic (nee Gledich)	1976 -

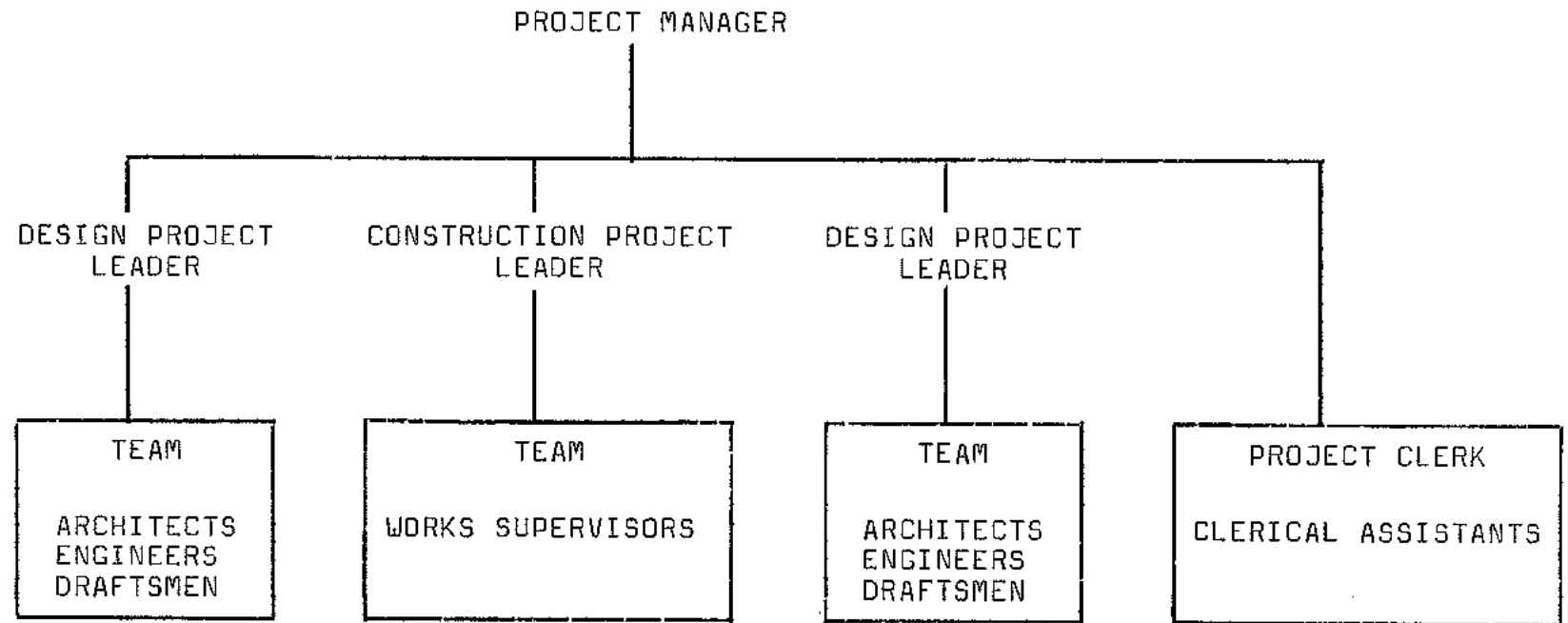
### Some Long Serving Retired Characters

Joe Ballard	Supervisor
Jack 'B Dunit' Ballenger	Architect
Terry Brennan	Furniture Officer
Lance Buzza	Draftsman
Tess Callaghan	Contracts Clerk
Stan Clark	Supervisor
Ken Crockford	Architect
Marty Crowe	Administrative Officer
Ted 'Saintly' Cunningham	Engineering Supervisor
Frank Doherty	Staff Clerk
Tess Doherty (nee Matison)	Typist
Jack Donaldson	Engineer
Charlie Duncan	Supervisor
George Eaves	Programming Clerk
Stan 'Tich' Gilles	Architect
'Jock' Green	Supervisor
Mark Greene	Technical Officer
Lou Hagarty	Stores Clerk
Les 'Darky' Hallett	Timekeeper Clerk
Wally Hammence	Supervisor
Alf Hewitt	Supervisor
Tommy Holmes	Architect
Jack Hooper	Administrative Clerk
Alan Jones	Personnel Officer
Eric Kenwood	Plant Supervisor
Dick Kilpin	Architect
S.R. 'Fred' King	Stores Clerk
Dave Marriott	Plant Printer
Jock Munachen	Accounts Clerk
Ken Lewin	Supervisor
Jack Murray	Resident Engineer, Hollywood
Tom Oakley	Supervisor
Lennard Hastings Parry	Draftsman
Tom Power	Supervisor
Stan 'Rolly' Rebonds	Supervisor
Harry Roger	Structural Engineer
Tom Robinson	Engineer
Les Sargent	Supervisor
Erik Smits	Architect
Gerry Smythe	Supervisor
Dick Stevenson	Accounts Clerk
Eric Stoddard	Engineer - Ex Director NT 1942-45
Jack Thomas	Engineer
Rex Ward	Supervisor
Les 'Shoofy' Wheildon	Foreman
Ron 'Shoofy' Wheildon	Supervisor
Len Wise	Workshop Clerk
Jim Yourie	Stores Supervisor





TYPICAL PROJECT MANAGER'S GROUP





## AS AT 21.1.1981

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(MECH)
(BLDG)
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#### 4. SOME EARLY COLONIAL PUBLIC WORKS

##### 4.1 ALBANY CUSTOMS HOUSE AND POST OFFICE

The arrival of a small brig named "Amity" at King George Sound on Christmas Day 1826 began the first European settlement in what is now Western Australia. Originally a remote penal outpost of the Colony of New South Wales, Albany struggled against many odds to establish farming, whaling and sealing, and an important mail steamer service. Albany's unique position, throughout the nineteenth century, as the mail port for Western Australia, led to Albany being the colony's major port.

Until the 1870's, Albany was badly served with public buildings. The various government concerns - post office, Resident's office, Customs, bonding store and courthouse were scattered over the town in various rented premises, an inefficient and primitive conglomeration. During 1867 the Government Clerk of Works, James Manning, drew up plans for new offices. Tenders were invited and of three received, the lowest for £4,184 18s 9d was accepted. The site was at the foot of Spencer Street and Mt. Clarence overlooking the Jetty which had been erected in 1861. 7,000 cubic yards of sand and soft stone were excavated from the site by convicts and Crown Prisoners to achieve the entries at two levels for the building as designed.

Commenced by the Contractors in April 1868, it was completed and ready for occupation in December 1869. Approached from the Lower Spencer Street towards a balconied structure were the Customs Bonded Stores. These stores were separated by an internal wall from the massive granite wall which, with its five foot thick buttresses, was constructed to retain the soil above after the extensive excavations. Above the stores were offices of the Customs House, room for the Post Office, and later telegraph office, and also a caretaker's living quarters, which were approached by steps

to the western end of the first floor. On the highest level, with entry from Stirling Terrace, was the courthouse and accommodation for magistrates, witnesses, jury and prisoners.

The materials used were local and described as being bricks from kilns at the top of York Street; freestone quoins and lime from the Government quarry at Limeburner Creek, on the south side of Princess Royal Harbour; granite from the nearby Mt. Clarence; and timber and she-oak shingles from Plantagenet Groves. The whole of this building comprised the eastern half of the present building.

Local historians say the Court Hall was used for local government meetings as well as for theatrical performance, debates, lectures, concerts, socials, meetings of sporting bodies and other local organisations, and even for church services.

With the completion of the Great Southern Railway in 1889, along with the new and bigger wave of expansion following the gold discovery in the early 1890's, the government offices urgently needed more accommodation. The western end was extended incorporating a clock tower and new post office, the courthouse being moved to its present building.

The second stage was far more ornate and elaborate in character and vastly different in style from the original simply proportioned colonial style structure. It was designed by the Government Architect of the time, George Temple Poole, and erected by Tighe Brothers under the supervision of Mr Francis Bird at an approximate cost of £4,500. The work was completed in late 1895 and the building opened in 1896. The bricks were from local kilns; the arches, Royal Coat of Arms and other external stonework of Sydney freestone; foundations were, as before, of Albany

granite. The whole roof was of local she-oak shingles, dominated by a circular clock tower eighty feet high. At this time, speaking tubes, internal lifts and private letter boxes were installed.

Mr Poole proved his mastery of the technical aspects of his profession with the beautiful stone geometrical stairway constructed of Sydney Bluestone which spirals up the interior of the clock tower. Each tread consists of a single stone embedded in the outer wall structure and the weight of each stone is borne by the one below, there being no inner support. Balusters of this fine geometrical stairway are cast-iron and the wooden handrail sweeps gracefully in an uninterrupted curve.

Apart from the use of the building for Postal and Customs duties, and the original Court House, Local Government and Public Hall usage, the building has also given occupancy to the Department of Navy; Department of Employment and Industrial Relations and the Taxation Department. With the opening of a new Post Office in York Street in 1964, a new Customs Department building closer to the new harbour area and new Commonwealth Offices in York Street, the building was no longer required for Commonwealth purposes. The building was acquired by the local Council and is now occupied by a Restaurant/Night Club, the Mission for Seamen and a number of community groups.

The usual maintenance and minor alterations to internal layout over the years have not in any significant way disturbed the outside appearance, apart from re-roofing of the building in 1949 with red-brown Marseille pattern terra-cotta tiles having a more dominant colour and size. The clock tower and one turret remain with their original shingles.

To visitors, the old Post Office is a landmark which adds romantic charm to the port. To Albany residents, it is far more, for here has been enacted much of the town's history over the past 100 years.

BRUCE LANGFORD

References:

Photographs and Report held in Library (January 1967)  
Records held in G.M.O.'s Section

## 4.2 COOLGARDIE AND KALGOORLIE POST OFFICES

### Introduction - Architecture Before the Goldrush

The gold discoveries in Western Australia came at a time when the colony desperately needed both population and money, to further consolidate its existence.

Unlike the Eastern colonies, Western Australia was colonised without the aid of convict labour for building works until 1840, and rather than the large, prosperous buildings of the East. Western Australia possessed a very utilitarian Architecture, with little indication of wealth or status.

It was not until the years following 1850, that the convict labour, together with South Australian stone masons, began to produce substantial public buildings (1874-80) and St. George's Cathedral (1880-88) - formed the transition years in Western Australia architecture that provide valuable precedents for the buildings of the Goldrush era.

### Goldfields Post Offices

With the major gold discoveries in 1892 (Coolgardie) and 1893 (Kalgoorlie), population increased dramatically in both Perth and especially the newly found centres in the Goldfields. There followed a need for localised points for claim registration, financial recording and personal and business communications, as well as banks and commercial buildings.

Post Offices and an efficient postal service had to be established.

### Coolgardie Post Office

Initially, a tent served as the Post Office, but this was followed by a timber and iron building in 1894. As with

all major public works at this time, the building was designed by the State Public Works Department (which was also responsible for the Town Hall in Perth, although there is some question).

A year later, in 1895, the first freestone and granite building in the Goldfields was completed at a cost of £7,060, being the first permanent Post Office. Unfortunately, the building did not receive rave reviews in the "Coolgardie Miner", being said to possess not one redeeming feature.

Not as an answer to this criticism, but as a means of providing more accommodation, renovations were carried out in 1897, at a cost of £4,932. The following is the Public Works Department Architect's report to Parliament in 1898:

"Coolgardie Post Office Additions.

Two-storied principally, large additions to mail room, new money order, savings bank, and stamp offices, postmaster's office, record room and two clerks' rooms on the ground floor. On the first floor, quarters of six rooms, kitchen, scullery, store rooms, bathroom and asphalted courtyard. Public clock on brackets.

Stable of two stalls, harness rooms, battery, cleaning room, fencing, concrete foundations, stone and brick walls, iron roofs. Completed in January 1898.

Contract let and completed within the year. The new buildings partly replace the original corner tower which was inconvenient, and not adapted to carry a second storey."

During this period also, a number of transportable Post Offices were brought to the Goldfields, with two in Coolgardie, to supplement the ever-increasing service and the need for accommodation.

On March 1st 1901, the Commonwealth Government took over the postal service, and paid the State £13,600 compensation, being the total value of land and buildings.

Further renovations were carried out by the Commonwealth in 1919 and 1949, and the building basically remains the same today.

During its heyday, Coolgardie supported a population of 15,000, coming only after Perth and Fremantle. At the turn of the century there were over 100 buildings in the town, including twenty-three pubs. There were also 18 buildings contractors and 14 doctors, and the town consisted of two suburbs - Montana and Toorak - on opposite sides of the track.

In 1959, the population was 250, and today is 3,700. The town is set up by the Tourist Bureau with signs showing locations of the past glories, and to this end, the Post Office, in a good state of repair, is probably the most substantial built reminder.

#### Kalgoorlie Post Office

As only six months separated gold discovery in Kalgoorlie from that in Coolgardie, the first temporary Kalgoorlie Post Office was put up in 1894, as in Coolgardie.

It was four years however, before the permanent stone building we now see was commenced.

An interim galvanised iron structure was built in 1896 at a cost of £708 5s 0d, and this remains today at the rear of the stone buildings.

The Public Works report said of the new buildings in part:

"..... the building, as designed, will be the largest and finest of the buildings so far erected on the Goldfields of the Colony ....."

The tender price was £22,000, and the building is built on a site measuring 6500 square metre in area. Building area is a total of 4800 square metre in two storeys, with the Post Office occupying one half of both storeys with a facade of 40 metres. The other half of the building is State owned, originally being the Warden's Court, and this is separated from the Post Office with an arcade surmounted by a 35 metre high clock tower.

Beneath the clock tower is storage for 8000 gallons of water, for use prior to the arrival of scheme water from Mundaring Weir in 1903. A further 18000 gallons was originally stored in underground tanks. Freestone and granite were quarried locally for use in the building, and the roof was slate tiles with wrought iron ridging, the whole being replaced in 1935 with corrugated iron. In 1958 and 1965, the building underwent extensive maintenance by the Commonwealth at a cost of £20,274, and the roofing was rebuilt in tiles.

Both Coolgardie and Kalgoorlie Post Offices were not built as faithful reflections of the times. While many public buildings of the goldrush era exhibited flamboyance of detail and reproductions of neo-classicism, these two buildings maintained a Colonial simplicity, and any early criticism of them could be seen as an over reaction to their scale and apparent grandeur as symbols, of the wealth that was both won and lost.



References:

Historical Reports:

Kalgoorlie Post Office - Commonwealth Department of Works 1969  
Coolgardie Post Office - Commonwealth Department of Works 1969

Book:

Western Heritage - Kay and John Oldham  
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#### 4.3 FORREST PLACE

##### THE GENERAL POST OFFICE

In about March 1911, Colonel David Miller, Secretary, Department of Home Affairs, travelled to Perth to look for potential sites for a new General Post Office. His report was submitted to King O'Malley, the Minister for Home Affairs, who then began acquisition proceedings for the block of approximately three acres opposite the Central Railway Station.

The purpose in acquiring land of much greater area than the needs of a new Post Office required was -

..... that it might be available on which to concentrate Federal Government activities at one centre over a long future period, and that this foresight had been suggested by disabilities experienced by want of land in the older Capital Cities .....

The General Post Office did house all Federal Government departments for a short time, though expansion beyond Forrest Place soon took place.

The land was acquired on 28th August 1911, for £166,370, the total payments involved being £178,376; the extra was compensation for terminating leases.

The idea of a monumental group of buildings caught the imagination of some. The Sunday Times of the first of October 1911 published an article expressing delight at the prospect:

there will be a grand pile of Federal buildings  
..... designed to meet the needs of a capital  
with half a million.

On the 19th November 1912, the Director General of Works, Col. P.T. Owen, wrote to the Minister of Works and the Secretary, Department of Home Affairs, describing the General Post Office proposal - to open a new street 66 feet wide opposite the railway station clock, with the Post Office on the north west side midway between Murray and Wellington Streets. Hillson Beasley, Principal Architect for the Western Australian Government was invited to Melbourne to confer with the Director General on the plans for the new General Post Office and a scheme was prepared in the Melbourne office during his stay and under his direction in consultation with Commonwealth officials - there was no Federal Works Department in Perth at that time and all Federal projects were supervised by the State Government Works Office.

One of these 'officials' was certainly John Smith Murdoch, an architect who at this time was Senior Assistant to the Director General of Works. There is some doubt as to the actual authorship of the General Post Office scheme though evidence points consistently at Murdoch.

The City Council and Town Planning interests continued pressure for the widening of the new street and in 1914 Federal Government agreed to observe certain street alignments - an 84 feet wide new street and 15 feet setbacks on Murray and Wellington Streets.

Drawings for the General Post Office were nearing completion by this time and discussion over the new street cooled somewhat - at least for nine years or so. Tenders were advertised and a contract signed with C.W. Arnott on the 7th July 1914 for a lump sum of £232,700. The intention was to build to five storeys with provision for an additional two when the need arose.

The foundations were a problem, the subsoil being a mixture of sand and silt. The solution involved driving in clusters, 1,500 30 foot jarrah piles, each 15 inches in diameter. The building has a concrete encased steel frame faced with brick and stone - on the front elevation, granite from Mahogany Creek up to the first floor level with Donnybrook sandstone above that.

The War affected operations drastically - the steel embargo in 1916 held up work until 1920 when steel was available from the B.H.P. works at Newcastle, and then an engineers' strike stopped work for a further six months. The conditions of the original contract were of course void on the outbreak of war and a new agreement was drawn up in the form of a cost-plus contract. An additional contract was signed on the fourth of July, 1921 for the building of the two extra storeys mentioned earlier bring the completed cost to approximately £400,000 - a very expensive building in those days.

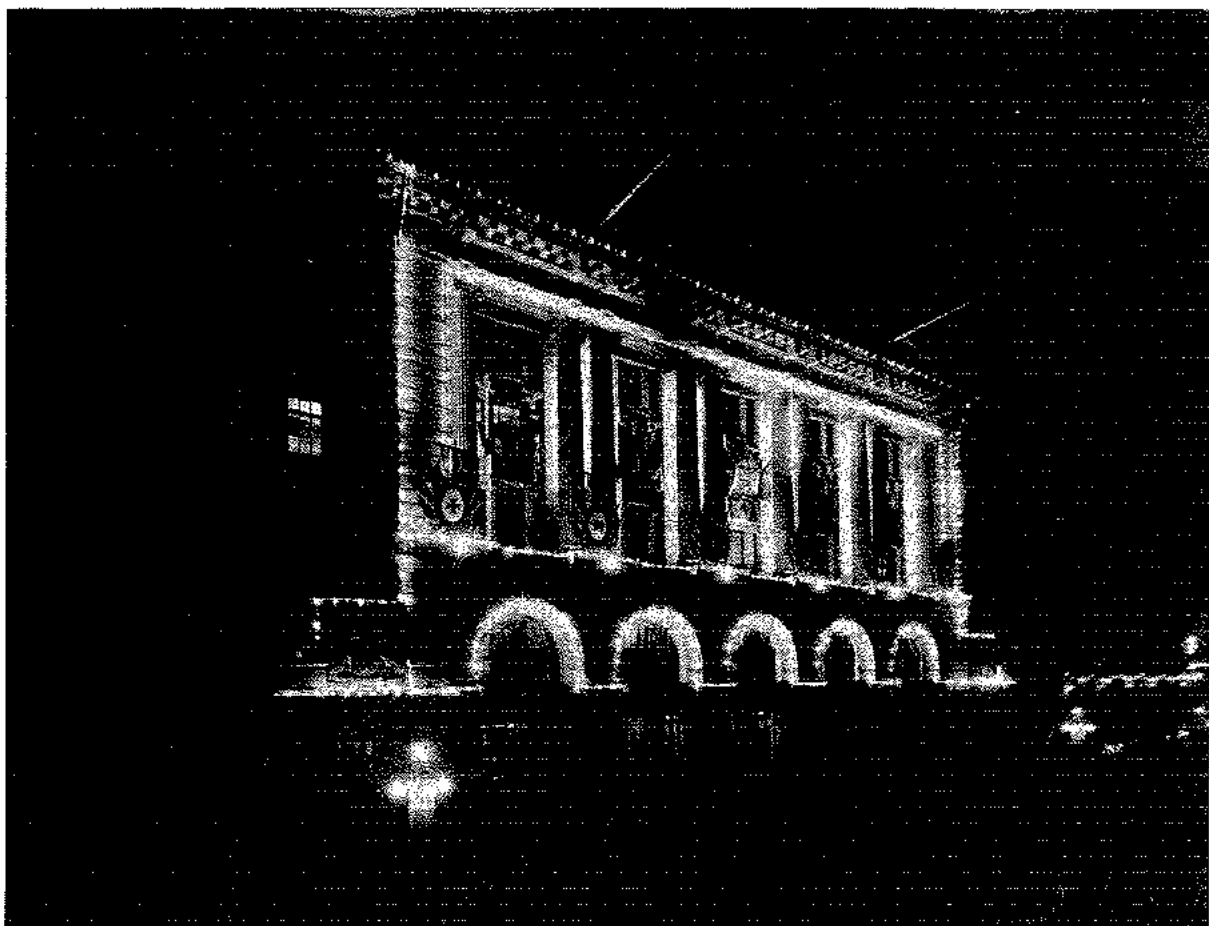
Comparatively new on the building scene in Perth was the use of mechanical plant in the form of two five-ton electric cranes, two 30 cwt hand cranes and three travelling cranes. Work was supervised by the State Government Works Department, initially under Beasley and finally under W.B. Hardwick, the building being completed in 1923.

On the 15th August 1923, the City Council resolved to call the new street 'Forrest Place'; the opening ceremony was performed by Lord Forster and the naming by Lady Forrest, on the 26th September.

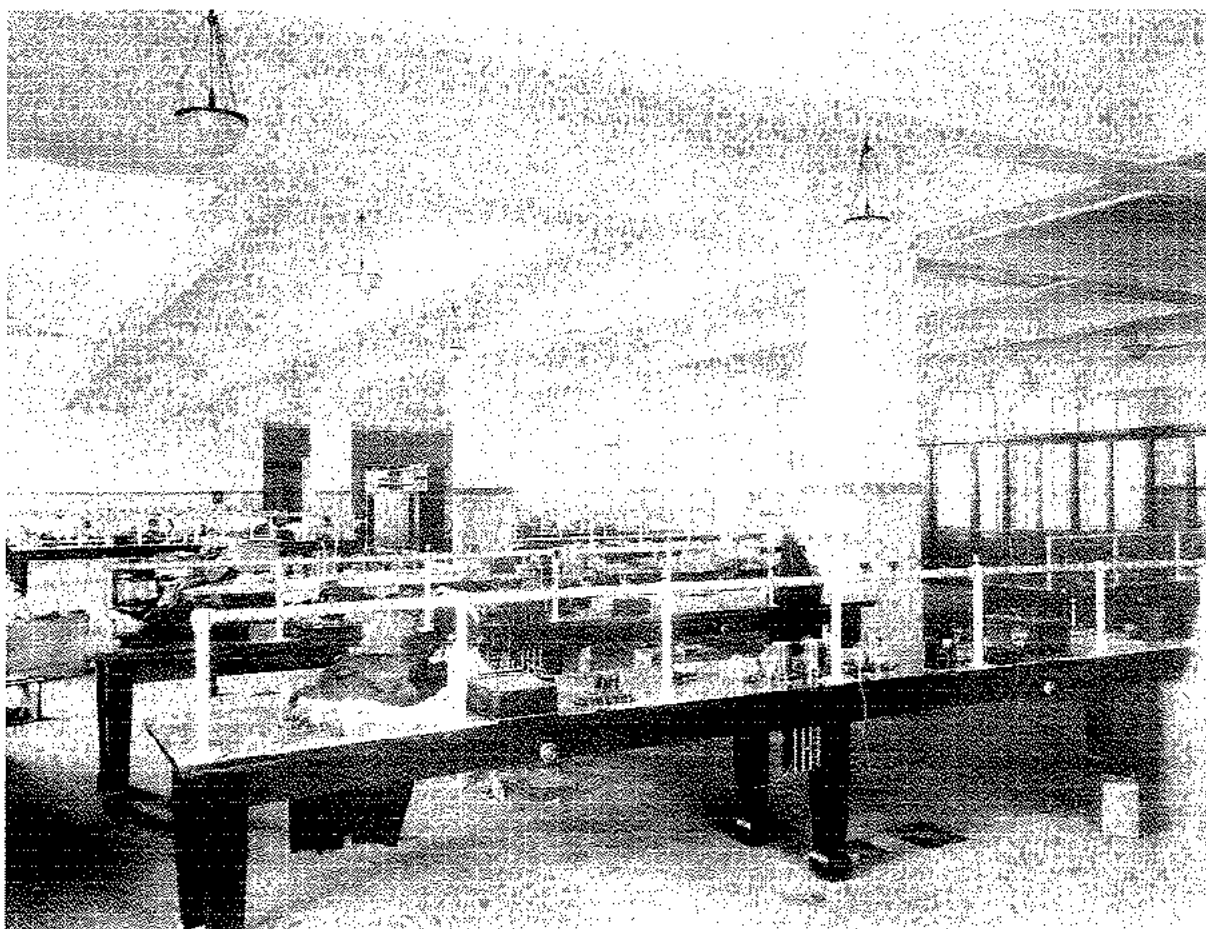
The Commonwealth Gazette of 22nd May 1924, shows that the 60 foot wide strip opposite the General Post Office was leased to William Padbury from the 7th May for 50 years at an annual rental of £6,620.

Padbury commissioned the architectural firm of A.E. and A.B. Cox and partners to design the building which stands there today, built in 1925.

MIKE LATKOVIC



G.P.O. FORREST PLACE - DUKE OF YORK VISIT 1927



TELEGRAPH OPERATING - 3RD FLOOR

#### 4.4 FORREST PLACE

##### THE COMMONWEALTH BANK

The Commonwealth Gazette No. 26 of 15 March 1928 records the sale of 1 rood 18 perches of land to the Commonwealth Bank. The Bank's architectural staff, stationed in Sydney, prepared drawings and a contract was let to Andrew Douglas for £207,000; the General Post Office contractor, C. Arnott, submitted a tender of £234,000. Construction began in April 1930 under the direction of R.M. Baxter, architect in charge.

This contract was a boom to the contractors for it means full employment of labour and equipment together with a guaranteed income during the years of the depression.

The building is of reinforced concrete frame construction with mushroom columns and flat plate floors. A Karri pile foundation was used, the subsoil being clean, white sand. Granite from Greenmout Quarry faces the building up to the springing point of the arches, with free-stone above that. This was the last of the stone faced buildings built by the Commonwealth.

Stone cutting equipment was hired from A.T. Brine who was stone mason for the General Post Office and St. Mary's Cathedral in Victoria Square, completed in 1929. A lathe was modified to carry the 4-ton drums or column sections and a planer modified to flute the drums.

The work progressed smoothly with only two real problems developing. These were firstly the subsidence and damage to the P.M.G. main telephone cables to the General Post Office during pile driving, and secondly the dislodging of a section of stone cornice by an apprentice bricklayer, the hefty piece chipping pieces off the Ionic columns as it fell,

finally burying itself four feet into the footpath below. Damage to one of the Ionic volutes of a column capital was something of a setback - each of these capitals took about six weeks to carve; however, a new piece was carved and spliced into the broken section. The last stone was fixed on 4 March 1933, and the building was officially opened on 22 March.

MIKE LATKOVIC



## 5. OUR LARGEST CLIENT

### AUSTRALIA POST AND TELECOM

Rapid communications is an accepted necessity in today's modern world and it is interesting to study the development of our uniquely large and isolated State of Western Australia, together with the development of the Postal and Telecommunications systems.

#### PRE-FEDERATION

As one would expect Postal activities or what is sometimes called the 'physical communications business' were initiated soon after the settlement was established at Fremantle in 1829. Within six months of the pioneer party arriving in the Swan River Colony it was publicly announced that the Harbourmaster at Fremantle would act as Postmaster for the settlers. Perth's only mail facility at this time was a collection box at a storehouse. By 1830, honorary Postmasters at Fremantle and Perth operated a three times a week delivery between the two settlements. In 1835, a building in St. George's Terrace (on the approximate location of the existing International House) was proclaimed the General Post Office for the colony. This General Post Office is not to be confused with a later General Post Office on the corner of Barrack Street and St. George's Terrace. Post Offices in Fremantle, Guildford and Albany existed at this time. In 1841, the first Postmaster General was appointed. The need for postal services grew rapidly, a direct result of economic activity and population moves. Post Offices were opened up all over the country - York (1840), Bunbury (1841), Mandurah (1846), Geraldton (1851), Cossack (1874), Eucla (1877), Carnarvon (1882), Onslow (1884).

In 1869, private interests erected the first telegraphic line in the Colony between Perth and Fremantle, twenty-four years after Samuel Morse's first American line and nine years after the first line in Australia. The success of

this line resulted in a company being formed and the Guildford-Perth line opening up in 1871. In the same year, the State Government purchased the existing line and extensions from the private company and assumed control, creating the position of Superintendent of Telegraphs. The service was merged with the 'Posts' and henceforward the Department was named 'The Posts & Telegraph Department'.

Telegraphs spread rapidly throughout the State. York, Newcastle (50 miles east of Perth), Northam and Albany were connected in 1872, Bunbury and Busselton in 1873, Geraldton in 1874. Also in 1874, work commenced on the King George's Sound to Eucla line, which together with a push west by the South Australian Government provided the telegraphic link with the Eastern States in 1877. The famous overland line Adelaide to Darwin was previously completed in 1872, so with the completion of the east-west line in 1877, Western Australia was now in contact with England and the world beyond via the Darwin/Java submarine cable. (A second intercontinental cable was to be completed between Java and Broome in 1887).

The invention by Alexander Graham Bell of the telephone in 1876 was to provide a form of communication that was to slowly push the morse code system of communication into the background. By 1878, Australia had its first telephones, by 1880 telephone exchanges were in Sydney, Melbourne and Brisbane, by 1883 in Hobart and Adelaide and Perth by 1887. The first Perth exchange was a small three-bedroom cottage adjacent to the Beaufort Street bridge in Wellington Street. It was opened in December 1887 with 17 subscribers. The following year the Fremantle exchange, operating from the back of the Town Hall, opened with seven subscribers.

In 1889 Legislature decided that the Posts and Telegraph Department should assume control of the telephone system

as it then existed. The Perth exchange was relocated in 1892 in the St. George's Terrace Post Office. In 1895, exchanges opened in North Fremantle, Geraldton and Albany with a total of 495 services connected. Further exchanges opened in Guildford (1896), Coolgardie (1898), Kalgoorlie (1897), Boulder (1897), Cottesloe (1898) and Northam in 1900.

At the turn of the century, Western Australia had 175 Post Offices and 160 telegraph (telephone) offices, serving a population of 178,000. This compares with 86 Post Offices and 42 Telegraph offices in 1890, serving a population of 46,300 persons.

### POST FEDERATION

With the Federation of Australia came the introduction of the Posts and Telegraphs Act under which all postal and telecommunication services were gradually taken over by the Commonwealth under the control of a Federal Postmaster-General. The first significant buildings built after Federation were the General Post Office in Forrest Place, completed in 1923 and the Murray Street Central Telephone Exchange operational in September 1914.

The Forrest Place Post Office is discussed in greater detail elsewhere in this history. The building is still in use but its function has changed slightly over its 50 year history as one might expect when you consider the expansion of postal services over those years. It still houses telephone equipment which is being phased out and located in new specialized buildings referred to later in this article.

Perth was the first capital city to have an automatic telephone exchange and it was preceded only by the Geelong Exchange in Victoria operational only two years earlier in 1912. It is interesting to note that Perth's network today and the building extensions at the rear, and the modernization

of telephone equipment internally have not altered the external appearance of the building facing Murray Street.

The continued growth of Western Australia both in its metropolitan and rural sectors saw an increasing demand for buildings. Although a few buildings, both postal and telegraphic, were to close down over the years as gold and other mining ventures petered out, the growth of the community and their need for communications continued. The rural area particularly demanded better services and this was a difficult task, particularly over the depression years. The pioneer days when a post office could operate from a 400 gallon water tank as it is recorded to have done in the early day of the north-west, were over. Post Offices were to become significant buildings in most rural towns, standards of design were high and usually contemporary, building construction standards were also high and the Post Offices as a result compared favourably with the other prestige buildings in towns such as the halls and churches and council/shire buildings.

The Telecommunications buildings were frequently attached to the rear of the Post Office buildings or incorporated in makeshift accommodation. Where separate buildings were provided they were often less significant buildings as contact with the public was minimal.

#### The Perth Mail Exchange

While the technical developments in the area of telecommunications were dramatic with interstate telephone lines completed in 1930 and the first automatic rural exchanges providing 24-hour service to country subscribers commencing in 1935 (Brunswick Junction), the postal service growth was nevertheless very rapid. Post Offices grew in numbers and older Post Offices were enlarged to deal with the more widely dispersed community and increased postal traffic.

The General Post Office building was gradually becoming overworked and was clearly not suitable for the modern mechanized methods of handling mail that were now becoming available. The decision was made in 1967 by the Parliamentary Standing Committee on Public Works to proceed with the erection of a four-storey Mail Exchange building on the corner of Newcastle and Stirling Streets, Perth. The building as it now stands is anticipated to deal with Western Australia's growth in the postal area into the 1980's and future lateral additions on the 2½ acre site are then contemplated. The location of the building was important, only one kilometre from the City centre that produces 20% of the postal traffic and yet is sufficiently isolated from city vehicular traffic to enable rapid relatively delay-free movement of the 360 vans that visit the exchange daily.

The activities within the Mail Exchange are predominantly mail sorting and with the P.M.G. policy of the day aiming to minimize manual handling of mail, sophisticated machinery dominates the interior of the building. The semi-industrial appearance of the building is therefore suited to the building's function. Windows are limited, providing visual relief only to staff engaged on close work; less windows enable better lighting control for the exacting work by the occupants and reduce solar heat loads on air conditioning equipment already made substantial by the heat loads generated by the mechanized mail sorting equipment. The structure itself is designed to provide maximum flexibility with floors that can be almost penetrated at will to house any new vertical mail handling and sorting equipment that might be installed in the future. Up to 630 people occupy the building at any one time, providing not only the mail sorting facilities but also a Post Office and a Customs section for dealing with dutiable articles from overseas.

### Pier Telephone Exchange

On the telecommunications side the General Post Office Department recognized the need to expand Perth's facilities in the central area as well as to cope with intra and inter-state services now expanding rapidly as new technical developments took place. The first proposal for a large exchange building was for an eleven storey building to be located in Murray Street opposite Irwin Street. In 1951 sketch plans for this Irwin Exchange were approved in principle at a cost of \$1.7M. However, due to lack of resources, the scheme was delayed and a number of smaller projects, and in particular Bulwer Exchange, were developed to accommodate the more urgently needed facilities that were to be housed by Irwin. Due to expansion of the Perth General Hospital, an exchange of land resulted with the State Health Department and a larger site on the corner of Pier and Murray Streets became available for the new exchange building. By early 1965, the first stage (3 storeys) of the new Pier Exchange (in lieu of Irwin) was completed, and the remaining four storeys were added and completed by 1970; leaving the building as we see it today. Further telecommunication type development on the site was proposed but with the National Trust classifying the Murray Street 'vista', the old Government Printing Offices are now to be retained and work is presently under way to renovate this building to provide the new Postal and Telecommunications Museum, the original being destroyed by fire earlier this year. Acquisition of additional land will be required if further development of the Pier Exchange is to proceed in this area.

### The Split Into Two Commissions

In 1975, the Australian Government, on the recommendation of the 1973 'Vernon' Royal Commission of Inquiry into the Postmaster-General's Department decided to divide the Department into two separate commissions - one, the Australian Postal Commission (Australia Post) to look after

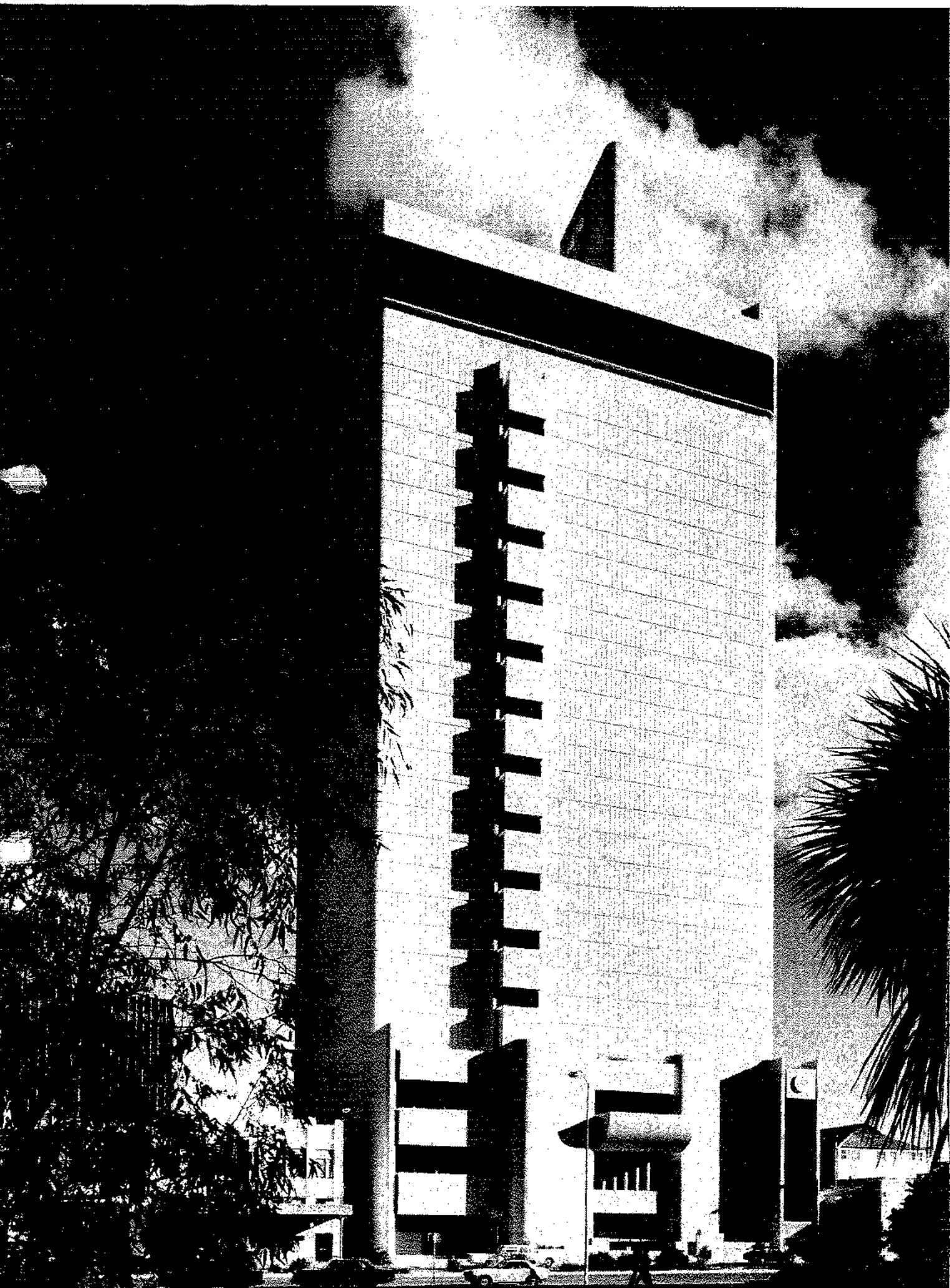
the nation's mail services; the other, Australian Telecommunications Commission (Telecom Australia) to handle telecommunications. Among reasons given by the Vernon Commission when it recommended the division, was the fact that both services had gradually developed quite different responsibilities and were both large organizations in their own right.

As large organizations these two Commissions both in their present form and also in their old guise as the Postmaster General's Department have provided the Department of Construction (under its various titles since inception) with an enormous amount of design and construction work. For the 1978/79 financial year Postal and Telecom together account for \$4.9M or nearly 25% of our total work of \$20M. They are clearly important and valued clients who not only provide us with large quantities of work but also a large range of work, from minor maintenance and repairs, to alterations and additions of various sizes, to new works both small and major.

While Australia Post work has an element of mechanization about their buildings, the postal industry is still predominantly 'labour' intensive and as such our Department provides buildings directly designed for people to serve people from. For Telecom Australia however most buildings produced are now predominantly designed for telecommunications equipment, which is served by other equipment - relatively few people occupy these buildings.

#### Wellington Telephone Exchange

The specialized requirements of telephone exchanges are best illustrated in the recently completed Wellington Telephone Exchange. This \$21M project will house the very latest in electronic telephone equipment, computers for control of that equipment and to provide accounting systems, telex systems and complex and sophisticated communication equipment.



WELLINGTON TELEPHONE EXCHANGE - 1979



Only two of the total sixteen floors will actually accommodate people in any significant number. Wellington Exchange when it is fully operational will contain 400 people while a normal office building of the same size would accommodate in excess of 2,000 people. The most notable feature of the building is its apparent lack of windows which is a design response to the limited number of occupants and the solar heat loads incurred if windows had been incorporated. An additional advantage is the cost reduction achieved in the structure which was designed to resist modest earthquakes of the type Perth could anticipate. One feature of the modern telephone equipment is its ever increasing miniturization enabling more telephone lines to be serviced from a given volume of building. The resulting heat load generated from this equipment is extremely high requiring very large and reliable air-conditioning plants. The reliability of this air-conditioning involves duplication of many components including emergency electrical plant supplied by diesel driven generators on the top of the structure, two sources of water for the cooling towers from two separate main supplies and in addition should this water be cut off there are storage tanks sufficient to supply the chillers with water for up to four hours on the hottest day when all the telephone equipment is fully operational.

The building as a whole is supported on a complex and expensive system of piles which found on shale some 40 metres below street level. The building received some unfortunate press when difficulties in the piling work were encountered but it must be remembered that the site was that of an old lake and that the building must support equipment that is some three times heavier than the loads experienced in an office type structure.

The sculptured form of the completed building can be seen to use those elements that are essential to the correct functioning of the building - the end result is a very

successfully and honest architectural solution to an extremely complex building of which Telecom have expressed their pleasure and of which the Department of Construction can be justifiably proud.

CHRIS COURTNEY

## 6. CUSTOMS

### 6.1 'CONSTRUCTION' AND 'CUSTOMS'

The 'Department of Customs and Excise' came within the control of the Commonwealth Government by the Commonwealth of Australia Constitution Act of 1900 as a revenue collecting department.

Customs in Western Australia existed long before Federation. As early as May 1832, it was decided by the colonists that the appointment of a collector of Colonial Revenue was necessary. The collector was responsible for all taxes including customs duties. Duties were collected by the Collector of Colonial Revenue at Perth and by assistants, at other Western Australian ports, namely, Fremantle, Augusta, King Georges Sound and Guildford.

The principle of custom duties set in 1832 by the colonists still applies today, that is, custom duties should be set upon all articles of luxury imported into the colony to yield revenue without unduly pressing upon the comforts of the people, or to operate as a check to productive industry and commercial enterprise.

The early history of customs in Western Australia runs in parallel to the history of the City of Fremantle (especially Cliff Street), as this was the gateway to the new colony.

Cliff Street is probably of greater historical interest than any other street in Fremantle, if not in Western Australia. Before the inner harbour was created in 1892, every person or commodity arriving in the colony travelled from the Esplanade area along Cliff Street and then east into Fremantle along High Street or to a river jetty at the end of Cliff Street for transport to Perth.

It was in Cliff Street that the first Custom House was built in 1853. This building is flanked by buildings of similar construction and has a small area of the original Yorkshire flagstones at its front door. On the northern side of it is a building used as a Government store (Queen's Warehouse) and on the left another which is the office of the Inspector of Fisheries and Fauna. Behind these are other large stone buildings.

All these buildings were constructed of stone from the Government quarries at Rocky Bay.

With the construction of a new brick warehouse, in the late sixties by the Department of Construction, the use of the old Customs House and stores building for Customs commodities became obsolete. These buildings remained in a state of disrepair until 1978. At present the National Trust in conjunction with the State, Federal and Fremantle City governments are in the process of renovating the buildings to their original splendour for use as a Maritime museum.

The old Customs House was 'the centre of overseas trade' until the early part of this century when the Collector of Customs moved down the road to the 'new' Customs House at the corner of Cliff and Phillimore Streets.

The 'new' or present Customs House was completed in 1908. The plans were prepared by the Public Works Department, approved by the Commonwealth Authorities and built by Ashman and Wather Contractors. The building has a frontage of about 30 metres to Phillimore Street and about 27 metres to Cliff Street and is two storey in height.

The construction is of brick and Donnybrook freestone, the latter being described in articles of the day as 'the main

feature of the building". The building is adjacent to an area referred to in a report by the Fremantle City Council entitled "Fremantle - Preservation and Change". In regard to the western end of High Street - the area bounded by Henry Street, Phillimore Street, the Round House and the Esplanade - the preservation of the character of the area is recommended. As such, any work in maintenance and renovation to be carried out under the guidance of the Department of Construction should be in character with the area.

The growth of the Department of Customs between 1908 and the 1950's was absorbed within the existing building. During this time it called upon the then Department of Works to administer any maintenance and alterations internally that were required.

Finally, the "seam burst" and in 1959 the Department of Construction became involved in housing the administration and a number of sections in a newly built Commonwealth owned building in Perth, where they still remain. The Collector of Customs is therefore, separated from his main Customs House. Again in 1965 the growth of the Department outstripped the accommodation offered in the Customs house. The Department of Construction prepared the plans and let a contract for the extension to the customs house in 1966. An article in the "West Australian" newspaper described the proposal as follows:

"New and Old in Harmony at Port"

"The \$84,752 extension to Customs House in Phillimore Street, Fremantle, has been designed in a contemporary form.

But the new work should be in harmony with the old because of the overall choice of materials and simplicity of proportions.

The three-storey extension will be about the same height as the existing two-storey house with its 20 foot ceilings. The new facade will have vertical columns of brickwork with glazing and rendered spandrils between.

Advantage has been taken of the main southeast elevation to provide maximum natural lighting to the new area.

The new accommodation will be for preventive officers who have to be located close to the Wharf areas at Fremantle. Changerooms, amenities and offices will be provided for 60 men.

The ground floor will have offices, locker room and shower room. The first floor will include a mess hall, kitchen, a lecture room for trainees and an exhibition area for the display of contraband, particularly items of historical interest.

Administration offices will be placed on the top floor. The construction will be walls of load bearing brick and the floors reinforced concrete.

The extension is scheduled to be completed by early next year. The project architects are the Department of Construction."

In recent years the Department of Construction have undertaken feasibility studies for the Department of Customs and Excise for the construction of a new customs house in Fremantle. The new building proposal, at a site yet to be finalised, will bring together the diverse but inter-related activities of the Department of Customs and Excise in Western Australia to a common site suitably located to provide adequate facilities for the efficient performance of present and future operations.

With the mineral boom in the North West of the state during the 60's and 70's, together, with the problems of contraband entering this area the need for Customs houses in various ports had arisen. In recent years new Customs houses have been designed and constructed by the Department of Construction in towns such as Dampier, Port Hedland and Broome.

These buildings are sub-centres being administered from Perth and Darwin.

The quantity of work carried out by Construction for Customs over the years has not been large and has been mainly in maintenance of existing buildings, in various locations throughout the state.

In future the nature of the building work required by Customs and offered to them by Construction will depend to a large degree on the expansion of various ports and modes of transport.

The need for a new Customs house in Fremantle has already been made evident but shipping to other old or new ports within the state might increase thus necessitating larger accommodation. Also the quantity of air transport coming through Perth Airport, or any other international airport that might be established elsewhere, could increase in volume to such an extent that present facilities within the terminals will not cope.

ANGELO CHRISTOU

## 6.2 CUSTOMS HOUSE - FREMANTLE

During 1907/08, the present Fremantle Customs House was built by the State Public Works Department, for the then relatively new Federal Department of Customs, on portion of Fremantle Lot 1534 situated at the corner of Phillimore and Cliff Streets, Fremantle.

The Fremantle Customs House is a two storeyed structure built with pressed bricks in lime mortar on limestone footings, and has features and dressing in Donnybrook freestone, a sandstone eminently suitable for building purposes and which had been discovered only a few years earlier in the South West of this State.

In 1927/28, the building was modified by the addition of a new wing, and again in 1966/67 a three storeyed addition was built to accommodate the Preventive Officers Quarters and the Detection Branch. The additions were built by Universal Constructions Pty. Ltd. for \$106,500 and, when completed, provide 650 square metres (7,000 sq. ft.) of floor space, change rooms and amenities. The temporary office and stores accommodation built in 1950 was demolished to make way for the new three storeyed building. Prior to June 1965, a tentative scheme had been proposed to erect new offices on the old Department of Navy site bounded by Cliff, Mouatt and Croke Streets. The scheme lapsed and that site is now occupied by a Workshop and Store owned by the Department of Transport.

During construction of the Preventive Officers Quarters on 14 September 1966, strong winds blew down approximately 12.5 square metres of new walling that also caused damage to the adjacent building. About three years later the styrene ceiling panels were removed and replaced with an incombustible material.



Today, the building retains its function as the Preventive Officers Quarters for which it was designed and no changes are anticipated in the foreseeable future.

BILL PURICH

6.3 BUSINESS AND CONSUMER AFFAIRS  
11 WILLIAM STREET - CUSTOMS HOUSE

Five years after the foundation of the colony of Western Australia, a Revenue Department was formed by an Act of Colonial Legislature on 26 September 1834, and H.C. Sutherland was appointed the first Collector of Revenue.

Whilst the new Department was supposed to collect revenue from tariffs on all imported wines, spirits and tobacco, by 1854 it became necessary to overcome many unforeseen and unco-ordinated situations; hence the first Customs Regulations were promulgated. These new regulations were to be policed by the Western Australian Customs Department.

The first official Customs House in Western Australia was situated at the corner of Henry Street and Marine Terrace in Fremantle; living quarters for the Collector of Customs were provided upstairs.

As trade developed, the Western Australian Customs Department, in 1873, was transferred to other premises in Cliff Street, Fremantle, where it operated for thirty years. Towards the end of this period, due to the Federation of the Australian States in 1901, it became necessary to phase out, on a sliding scale over a period of five years, the export and import duties on goods between Western Australia and the Eastern States. At that time the staff of the Western Australian Customs Department were embodied in toto into the new Commonwealth Department of Customs.

In 1903, after the rapid rise in trade and population growth which followed the discovery of gold, the new Federal Customs Department transferred to temporary premises in the A.U.S.N. Building in Phillimore Street, Fremantle, from where

it operated until 1908. The transfer was made so that its previous premises in Cliff Street could be handed back to the Western Australian State Government.

During 1907/08, a new Fremantle Customs House was built on the other side of Phillimore Street at the corner of Cliff Street and in 1908 the staff moved across the road into their new building. This building continues to be occupied by the Department of Customs but in 1959 its role diminished to that of an Outport Customs House.

In April 1959, the Headquarters of the Department of Customs was transferred from Fremantle, where it had been for 125 years, to the new Government Office building at the foot of William Street, Perth. The Department of Customs occupied the lower East/West Wing of this new building. This Eastern wing is referred to as the Customs Wing and occupies approximately the same site as the old Perth Customs House which, from the time it was built in 1903 had been the "Outport" Customs House in Perth. It was demolished in 1955 to make way for the new multi-storied Government Offices.

Between 1955 and 1959, whilst the new multi-storied building was being erected, the staff of the Perth Customs Outport were temporarily accommodated in, the then newly erected, Prudential Assurance Building in St. George's Terrace, Perth.

The new Government Offices on the corner of William Street and Bazaar Terrace, Perth were designed and constructed by the Department of Works and the history of its development is described under "Repatriation" in this book.

BILL PURICH

#### 6.4 REPATRIATION AND CUSTOMS OFFICES 11 WILLIAM STREET

Prior to the enactment of the original Soldiers' Repatriation Act in 1917, there was in this State a State War Council established for the purpose of assisting returned soldiers. The main activities of this body appeared to be an Employment Bureau. The offices of this organization were situated in the very centre of the City of Perth in the old Police Court Buildings, Barrack Street, Perth.

These offices and the activities of the State War Council were taken over by the Department of Repatriation on the 8 April 1918 and found to be totally inadequate for departmental purposes. The State Government of Western Australia then leased a half-acre parcel of A1 Reserve known as 'Supreme Court Gardens' on Riverside Drive to the new Department; a temporary wooden and rough-cast building was erected and occupied in December 1918.

Various additions were made between 1918 and 1922. These included an early classroom for Vocational Training, a dining room for male staff, an X-Ray film store; in 1925 the Commonwealth Artificial Limb factory, due to a decline in its activities, was transferred from its West Perth site to the Vocational Training classroom. The annual rent in the first instance was £150 per annum; it rose to £300 in 1936 when a new separate block of Medical rooms was added. These buildings remained in use until they were demolished in 1959 in compliance with the lease agreement.

After consideration had been given to six alternative sites for the Department's more permanent accommodation, plans were prepared during 1940 by the Department of Works under the project leadership of W.H. Robertson, who later became lecturer in charge of the first School of Architecture in Western Australia, for a new office building to be erected

on a site at the corner of William Street and Bazaar Terrace, an easterly continuation of Mounts Bay Road. This site was occupied by a 'Customs House' having a classical facade along its William Street frontage and a timber framed and galvanized-iron clad Customs Laboratory which stood alone and with a setback from the Bazaar Terrace frontage. The proposal was for a five storied office building with its main facade along the curve of the William Street boundary. Its estimated cost was £162,000. Due to wartime commitments, the design was suspended in March 1941 and revived again in June 1944 with Mr S.H. Bedford as the Architect in Charge. As any building for civilian purposes had practically ceased during the war, the proposed new office complex, being the first proposed multi-storied postwar building, aroused much enthusiasm in the Department of Works and Housing, and an interest in the general public.

The addition of air-conditioning was considered and included; a most forward-thinking aspect of the design at that time. Exploratory boring occurred during December 1944 and in March 1945, a requisition for £162,000 was lodged for a tender target date in January 1947.

The footing design was made available in June 1946 and by October 1946 the working drawings of all floors had been completed. The measurement of Quantities was delayed due to lack of qualified staff. Tenders were consequently postponed until March 1947 when the revised estimate had escalated to £222,750, due to immediate postwar inflation. The reaction was an immediate cessation of all work, but within three weeks new sketch plans had been prepared for a taller building with the same curved frontage.

The estimate for the taller building rose still further to £361,750, to which another £15,000 was added after the Western Australian Chapter of the Royal Australian Institute of Architects had recommended the use of Donnybrook stone for the external facing.

Two months later, however, in July 1947, an entirely new design concept was suggested by Karl Hoffman, a migrant from Vienna, employed by the Department of Construction in Central Office, Melbourne. His suggestion was for the elimination of the curved design in favour of a winged building which allowed for a staged development. It was estimated that an additional 6,600 square feet of floor space could be obtained for the previous price of £361,750. The 'L' shaped Stages 1 and 2 were estimated at £250,000 and Stage 3, the 'E' shaped wings, to be built where the Army Drill Hall now stands, at a further £220,000.

The new design was rapidly submitted to the Standing Committee on Public Works, and on 18 September 1947 under the chairmanship of Charles A. Lamp, it was recommended that Stages 1 and 2 be erected and that Donnybrook stone be used as a facing material above a granite facing to the ground floors only.

Two days later, Architects S.H. Bedford and L.F.H. Parry left Perth for Melbourne, followed nine days later by Engineers L. Fenton and J. Donaldson to assist with preparation of the documentation. The drawings were completed by December 1947 and the men returned to Perth. Strangely, the drawings indicated standard brick facings. Then in March 1948, due to an escalation of the Korean War, Civil Defence requirements necessitated severe modifications to the design of the structural frame and of other building elements.

In September 1948, when redesign was well advanced, a request for postponement of the proposed construction was sought by the Western Australia Premier, Ross McLarty, as it was believed that such a large building project would make significant inroads into the State's building resources which were then in very strong demand for housing purposes.

Prime Minister J.B. Chifley replied that consideration would be given to the Premier's request and in February 1949, construction of the building was referred to the Senate. In May 1949, during the pause, it was decided that the laboratory areas should be omitted from the design.

By January 1950, it was estimated that tenders could be called in June 1950, but in February 1950 the State Housing Commission refused to grant a permit for building materials. This stalemate continued until June 1950 when Prime Minister R.G. Menzies advised Premier McLarty that due to the pressing need for office accommodation, a temporary building was being considered in lieu. During July 1950, the West Australia Branch design effort concentrated on a new temporary building for the Department of Repatriation.

From Government shuffling of departmental responsibilities in August 1950, the Department of the Interior became a landlord department that led to the cancellation of the £162,000 Repatriation requisition. Eventually in November 1950, as a sequel to the temporary building proposal by R.G. Menzies, Premier McLarty agreed to the construction of a permanent building, conditionally to materials in short local supply being imported from overseas, together with overseas tradesmen; the State would erect temporary accommodation for the migrant tradesmen.

The local dearth of Quantity Surveyors had been eased by this time, and in December 1950, Quantity Surveyor Frank Leroux estimated the cost of Stages 1 and 2 at £814,000, whilst one month later in January 1951, the Department of Repatriation desperately requested that both additional temporary and the permanent buildings be proceeded with.

However, an indefinite postponement resulted from the escalated estimate for the new building, coupled with a general reduction in the Works programme. The proposals were

left in abeyance until September 1952 when the Perth City Council disallowed the erection of further temporary accommodation on the A1 Class Reserve along Riverside Drive.

A month later, in October 1952, after another revised estimate had risen to £922,000 for Stages 1 and 2, it was expected that tenders would be called in April 1953. Progress appeared likely until January 1953, when the Department of Trade and Customs became suddenly aware that it was intended to demolish their offices and laboratory before provision had been made to rehouse them.

Although the requisition for £922,000 was received in March 1953, the position with the rehousing of Customs had not been clarified, so that in April 1953, the calling of tenders was once again postponed. The requisition for £922,000 was returned in June 1953 due to the uncertainty of the accommodation requirements, but it was requested again in July 1953 from the Department of the Interior for an amount of £900,000.

From August 1953 to August 1954, objections were received from the Department of Army relating to inconveniences to their adjacent property, the Drill Hall. Suggestions were made to include accommodation for the Attorney-General's Department within the new building, and moves were made to sell the structural steel which had been purchased and stockpiled some years previously.

Doubts were then expressed about the stone-facing and the waterproofing of the concrete walls on the weather sides, together with the inconvenience to any building contractor resulting from leaving the Customs House standing until Stages 1 was completed.

By June 1954, alternative accommodation at the newly built multi-storey Prudential Building in St. George's Terrace was



proposed for Customs, and it was decided to call tenders by the second week in August 1954. Due to another Government shuffle of departmental responsibilities, on 31 August 1954 the Department of Interior assumed control from the Department of Repatriation and a Requisition for £900,000 was received from the Department of Interior although the revised estimate had risen still further to approximately £1,000,000; however, this figure was reduced to £812,500 at the time of tender.

Eventually, in December 1954, tenders were called. Five local contractors and one interstate contractor lodged tenders; the lowest being £766,000 from A.T. Brine and Sons, a well established local firm. On 21 December 1954, their tender was accepted; the date for completion was 21 December 1958, four years later. The contract was signed by L.C. Lucas, the then Director of Works. S.H. Bedford was appointed Project Architect and L. Fenton became Supervising Engineer.

A start was made with the demolition of the Customs Laboratory in February 1955. A temporary laboratory building for Customs was provided on a site along Bazaar Terrace close to Mill Street. By May 1955, temporary office accommodation was ready for Customs in the new Prudential Building in St. George's Terrace and the old building was vacated and demolished. The feeling of a need to preserve links with our past was then not as strong as they are today and the 1903 building was knocked down without a murmur from the public. From the roof structure, it yielded some beautiful straight fully seasoned lengths of oregon timber, much to the delight of the Contractor. In the meantime, underpinning of the adjacent Dalgety's building and diversion of drainage to the Drill Hall was accomplished, together with some excavation which was in a firm clay with sand below foundation level.

Underpinning, sheet piling and excavation continued until November 1955, when the first footings were poured. As the Commonwealth stock of steel was insufficient for the whole job, B.H.P. were requested to expedite further supplied. Site meetings were held each week to ensure a tight co-ordination.

By January 1956, the steelwork design had been finally approved and the first six columns had been erected. A shipping strike and failure of the crane then delayed the steel erection early in the year, but work in the Basement areas, including the tanking and brickwork, together with the concreting of the lift pits proceeded without interruption. By July 1956, all the steel had been rolled, but shipping problems again delayed the supply of steel base-plates and the high tensile bolts. It was then discovered that the steel fabricator did not have the equipment to achieve the specified tolerances at the column splices; also it became obvious that output would have to double in order to maintain the building progress rate. In September 1956, the steel erection was further delayed by a shortage of structural draughtsmen. Although 60 men were working on the site, building progress in August 1956 was only 13.6 per cent and it was then realised, that at the current rate of progress it would take another 18 months to complete the concreting. The high-tensile bolt supply continued to be the most critical aspect during 1956, whilst other problems in regard to the fixing of the stone facing and payment for unfixed stonework in the mason's yard, together with water seepage into the Sub-Basement and problems with double glazing design each contributed to the construction difficulties.

As soon as the subdivisional walls in the Basement were built, fabrication of the air conditioning ducting commenced. Concrete work was cured by the use of fine jet sprays and saturated carpet-felt.

1957 got off to a bad start with another mishap to the crane that delayed the steel erection a further 3 weeks.

It is interesting to note that at the time of construction, Radio 6PR had a large mast on the top of Newspaper House. When the crane was at its highest, it was found that its hoisting cable picked up enough R.F. energy to enable a very healthy spark to be drawn from its hook. The unwary and uninsulated could receive a very sharp 'zap' which gave the old hands great delight to watch the rookie receive his first 'bite'. Even the experienced would at some time find some part of their anatomy too close to a metal earth at the wrong time and the inevitable spark provided much amusement for their workmates.

By April 1957, the Donnybrook freestone cladding was commenced. Due to variations in colour it was decided to eliminate the lighter stones from the North and East facades of the Customs Wing, but by July the Contractor reported that the quarry could not provide sufficient stone for the whole of the facing. It was then decided to obtain sandstone from the Eastern States. Sydney and Hawkesbury freestones were to be mixed, and the first shipment of Bondi stone arrived on the 'Duntroon' in October 1957. When the high-tensile bolts eventually arrived in May, they were without nuts; field staff were subsequently reduced.

The works in October 1957 were 50% completed and well behind schedule. In November, an unacceptable discolouration was noticed in the Sydney stone and by January 1958 the stonework was suspended pending the arrival of fresh stone from Sydney. The stone problem generated visits by the Principal Architect and Contractor to the Sydney quarries in an effort to resolve the discolouration issue. It afterwards became necessary to remove all stain and discolouration, and to bleach the Donnybrook stone to match the Sydney stone. Hence the two-tone appearance of the building today. Stone supplies

from Sydney were slow in arriving and it became necessary for the Sydney Branch Office of the Department of Works to keep up pressure and a check on the supplies from the Gosford Quarry. By the end of the year it became obvious that the building would not be completed on time and the Contractor requested an extension of contract time until the end of February 1959.

Strangely, when the stonework was nearing completion, the Geological Survey Branch of the State Government discovered abundant supplies of Donnybrook stone which was used to great advantage on the later extension to Parliament House with no problem of scarcity.

Donnybrook stone was originally discovered in 1897 whilst searching for gold. It became a favourite facing for Perth buildings; the old Perth Police Court being the first to use it in 1905.

In January 1959, a clump of English Elm trees which had withstood the ravages of excavation and other building activities were spared from the axeman by the persuasiveness of a group of architects representing the Western Australian Chapter of the Western Australian Chapter of the Royal Australian Institute of Architects, and architects S.H. Bedford and L.H.F. Parry of the Department of Works, together with members of the Tree Society and the Perth Society of Artists.

The elm trees, which are still thriving today, had been written into the building contract to be protected and preserved, but because they became an obstacle and a hindrance to the building construction, many dark plots were hatched to 'accidentally' destroy them. However, the trees were reprieved on each occasion that their execution seemed imminent. These familiar but unusual trees are believed to have been planted by Edward Timothy Hooley, who served in both Houses of State Parliament and who became the first

Western Australian Manager of a well-known pastoral firm, but who was best known for his epic 1,300 mile overland ride from Fortescue to Albany in 1868. The area around the elm trees had at one time been Mr Hooley's front garden. In 1964, a commemorative plaque near the trees was unveiled by Premier Brand to mark the centenary of Mr Hooley's arrival in Western Australia.

The new office building was completed in March 1959 and was taken over from the Contractor by the Director of Works at 2.15 p.m. and handed over to the Department of Interior at 3.30 p.m. on 27 March 1959. In 1961, air conditioning was installed to the Cafeteria.

Since that time, in order to keep abreast of changing accommodation requirements, modifications have been made to the internal office layouts. Recently, the Defence Services Homes Corporation moved into renovated accommodation on the first and second floors of the South (Repatriation) Wing.

BILL PURICH

## 7. 'CONSTRUCTION' AND 'HEALTH'

The Commonwealth Department of Health was established by an Order-in-Council in March 1921. The Department of Construction under its varying official titles has provided a 'Works' services to the Department of Health since that time.

Prior to 1921, a number of facilities now administered by the Department of Health were under the control of other Commonwealth departments and prior to Federation in 1901 a number of these facilities were part of State owned functions.

The Department of Health has therefore inherited a number of old (by Australian standards) buildings and establishments for the maintenance of which it looks to the Department of Construction. Few of these buildings have a claim to architectural significance though they tell a history because their locations and changed functions over the years bear testimony to changing national needs.

Among the earlier health facilities to be provided in Western Australia were Quarantine Stations and these were originally established by the Western Australian Government. In the days when travel by ship was the only way to reach Australia from overseas, passengers were disembarked at a number of Western Australian regional ports and as a consequence Quarantine Stations were established at Albany, Bunbury and Broome as well as Woodman Point. With the exception of Woodman Point, all these stations have now been closed. The Broome Station was demolished about 20 years ago to make way for a new jetty. The Albany Station has been converted for use as a Youth Camp and the Bunbury Station was disposed of to the State Electricity Commission in 1953. Woodman Point is still officially a Quarantine Station but its days also now appears to be numbered. When

this Station finally closes there will end an era not only for the Department of Health but also for the Department of Construction which has been involved in the architectural and engineering aspects of these quarantine stations for over half a century.

Another link in the association of these two Departments has been in the construction and maintenance of Health Laboratories. Two of these were built in Western Australia - one at Broome in 1939 and the other at Kalgoorlie in 1925. The Broome Laboratory was closed some years ago and for a while the building was used as a Divisional Office by the Department of Construction and subsequent to this it was taken over by the State Government and used as part of the Broome Hospital. The Divisional Office in Broome operated from 1950 to 1956 and its role was to provide a maintenance/construction point of control specifically for the northern part of Western Australia. The present Associate Director of the Western Australian Region, Mr R.H. Kennedy was the Divisional Works Officer stationed in Broome for the first three years 1950-1952.

The Kalgoorlie Laboratory building has an interesting history. It is a prefabricated building, designed and fabricated in Germany for one of the German possessions in Africa. It had lofty ceilings, a double roof and cast iron stumps with saucer shaped antcaps designed to be filled with oil as a barrier to crawling insects. It was shipped from Germany during the 1914-1918 war but before reaching its destination, the ship carrying it was captured by the Allies and escorted to Australia. The building apparently became part of the war reparations and was transported to Mt. Brown where it was used as a mine manager's residence and office. In 1926 it was acquired by the Commonwealth and moved to its present site in Maritana Street, Kalgoorlie.

Though quarantine stations for people are disappearing from the Australian scene, quarantine stations for animals are becoming more important and the Department of Construction in recent years has become increasingly more involved with the Department of Health in the design, construction and maintenance of these special types of establishments.

At Bicton, fronting the Swan River there is a quarantine station for the holding and care of newly imported cats, dogs and horses, pending their clearance of diseases exotic to Australian. In early years animals were brought from their ship at Fremantle, up river and landed at the Station's own jetty. Nowadays however road transport is used to bring animals from both ships and aircraft and further changes appear to be on the way. On behalf of the Department of Health, the Department of Construction has carried out feasibility studies on alternative sites for a new station to replace that at Bicton. Since most animals now arrive from overseas by aircraft, a new site adjacent to Perth Airport has been selected and design work for a new station is likely to be undertaken in the not too distant future.

Another larger quarantine station for import of bloodstock for the Australian primary industry is under construction on Cocos Islands in the Indian Ocean. This station is for cattle, sheep, goats and pigs and will be very nearly self contained complex. Designed by 'Construction' in consultation with 'Health' it is a \$6.4M scheme complete with its own water scheme, its own waste disposal system, internal roadways, electric power and telephones and a variety of special purpose buildings including Animal Houses, a Laboratory, Operating Theatre, Autopsy Room, Administration Offices, Feed Stores, Service Buildings, Residences and motel type accommodation. The construction and logistics are also being arranged and supervised by the Department of Construction. The station itself is something of a rarity as on the world



scene there are not many comparative establishments. With its completion Australia will have greatly improved access to some of the world's best breeding stock.

The development of international air traffic has brought with it the problem of quarantinable waste and the need to ensure this is disposed of without danger of exotic diseases entering the country. The responsibility for safe disposal rests with the Department of Health which in this connection sought the services of 'Construction' recently in the design and construction of two large incinerators - one costing approximately \$100,000 at Port Hedland Airport and one costing approximately \$580,000 at Perth Airport.

The quantity of work carried out by 'Construction' for 'Health' over the years has not been as large as for some other client departments but it has been both specialised and in widely dispersed locations. Apart from the work already described, the Western Australian Region of the Department of Construction has provided technical assistance to the Department of Health through architectural and engineering design, supervision and maintenance in a range of general and specialised facilities including Administrative Offices, Acoustic Laboratories, Child Care Centre and Hospitals associated with migrant holding centres in the immediate post war years.

In future the nature of the facilities sought may well change, but it seems likely that the pattern of a low volume of varied and specialised projects, as set in the first half century is likely to continue into the next.

RAY DURBRIDGE

## 8. CIVIL AVIATION

In 1909 the first heavier-than-air flight in Australia was made by Hargrave and Taylor in a glider biplane at Narrabeen Beach in New South Wales. This was followed in Western Australia by J.J. Hammond in a Bristol box-kite in 1911.

On 29 May 1919, West Australian Airways began a Perth/Adelaide weekly service via Kalgoorlie, Rawlinna, Cook and Ceduna, using DH66 Hercules biplanes. By the end of 1921 Major Norman Brearley's West Australian Airways and Horrie Miller were operating flights to Derby and elsewhere.

Langley Park on the Swan River foreshore was used as Perth's first unofficial airport between 1920 and 1923.

### East/West Night Lighting

File S28-9/6/183 of 29 August 1928 records an order placed on Edmond Dell Hill Esq. of Melbourne by our Contractor H.C. Little & Co. of 858 Hay Street, Perth for 19 incandescent rotating beacons. We were then the Commonwealth Works and Railways Department and the beacons were to be used on the East/West Mail route lighting scheme. Receipt from New York on the ship Durenda on 12 October 1929 of floodlights for Forrest is also recorded.

This work had a programme provision of £12,000 in the time of Major Cook as Regional Director. Mr H.P. Moss was Chief Electrical Engineer and the Western Australian Region Electrical Engineer was S.W. Cooke.

The Defence Department had entered into a contract with Major Brearley of West Australian Airlines for an aeroplane service between Perth and Adelaide with the Commonwealth providing the night lighting, which West Australian Airlines was to operate and maintain. West Australian Airlines commenced a Perth/Adelaide service with De Havilland DH66 Hercules

aircraft in 1929 taking  $1\frac{1}{2}$  days from Perth to Adelaide via Kalgoorlie, Forrest and Ceduna.

The lighting was an arrangement of engines, generators, beacons, Benjamin reflectors and floodlights.

Our plan E1962 of 13 November 1928 shows railway stations Deaken, Haig, Koronie, Loongina and Naretha to have beacons. Aerodromes at Cook, Forrest, Kalgoorlie and Zanthus were also to have beacons.

The plan shows in addition 'E' and 'W' in metal letters 20 ft x 15 ft painted white. A later request from Major Norman Brearley added a beacon number adjacent to the E/W indicators (27 March 1929).

Following the letter from Major Brearley numbers were allocated to the beacon sites as follows:-

Perth Nil, Bechina Hill 2, Northam 3, Tammin 4,  
Merredin 5, Southern Cross 6, No. 7 Pump Station 7,  
No. 8 Pump Station 8, Kalgoorlie Nil, Koronie 10,  
Zanthus 11, Naritha 12, Haig 13, Dungana 14,  
Forrest Nil, Deakin 16, Cook (S.A.) 17

These numbers painted either on the roof or in metal on the ground adjacent to East/West markers would show a pilot where he was and in which direction he was flying.

Installation of the beacons at various aerodromes and railway stations was completed on 14 March 1929.

In the excitement of all this history making Mr Cooke is recorded as having damaged and discarded a kapok pillow valued at 4s 3d that had to be written off after some exchange of letters.

### Maylands Aerodrome

Maylands aerodrome was officially opened in January 1924 and from then up to World War II catered for both scheduled services (to the north-west ports and Adelaide) and for flying training. With the evolution of larger aircraft and the presence of physical obstructions (notably brickwork chimneys) near the aerodrome it became obvious by the late 1930's that a more suitable aerodrome should be developed.

In 1938 the DC2 would barely fit into the Maylands aerodrome which could not be extended. It was on a peninsula with river on three sides and clay pits on the remaining side. The area was also subject to flooding. Although levee banks were built on the river side, in winter the area had to be pumped.

Our file S32/33 records the calling of tenders on 5 January 1933 for earthworks to the levee banks and for carting oyster shell filling.

At that time the Swan River was well known for the quantity and the size of its oysters and oyster shell was dredged into barges and delivered to the Maylands site for the filling work. Ashes from the East Perth Power House were also used for filling.

### Maylands Caretaker's Residence

Our file S29/30 of the then Western Australian Region of the Department of Works and Railways records a letter of 10 January 1929 from the Controller of Civil Aviation asking for a caretaker's residence to be constructed at Perth aerodrome (then at Maylands). The brief includes a requirement for the stabling of two horses and accommodation for two drays, together with the necessary room for the storage of fodder.

It is interesting that on 16 May 1929 we received a memorandum from the Director General of Works, Melbourne, suggesting some changes in the drawings. Apparently in those days Regional autonomy was not so widely practised.

#### New Airport Site for Perth - Attadale

File 36/39 records some excitement in May 1936 when we were involved in an attempt to obtain a section of T.M. Burke & Co's Attadale Estate, on the foreshore between Lucky Bay and Point Walter Spit. The file records that the Chairman of the Melville Roads Board had already issued 500 invitations, presumably to announce the sale of the building blocks in this estate. He could not be persuaded to withdraw the invitations, and the Commonwealth was hence unable to obtain the land for the airport.

#### Perth Airport - Guildford Acquisition

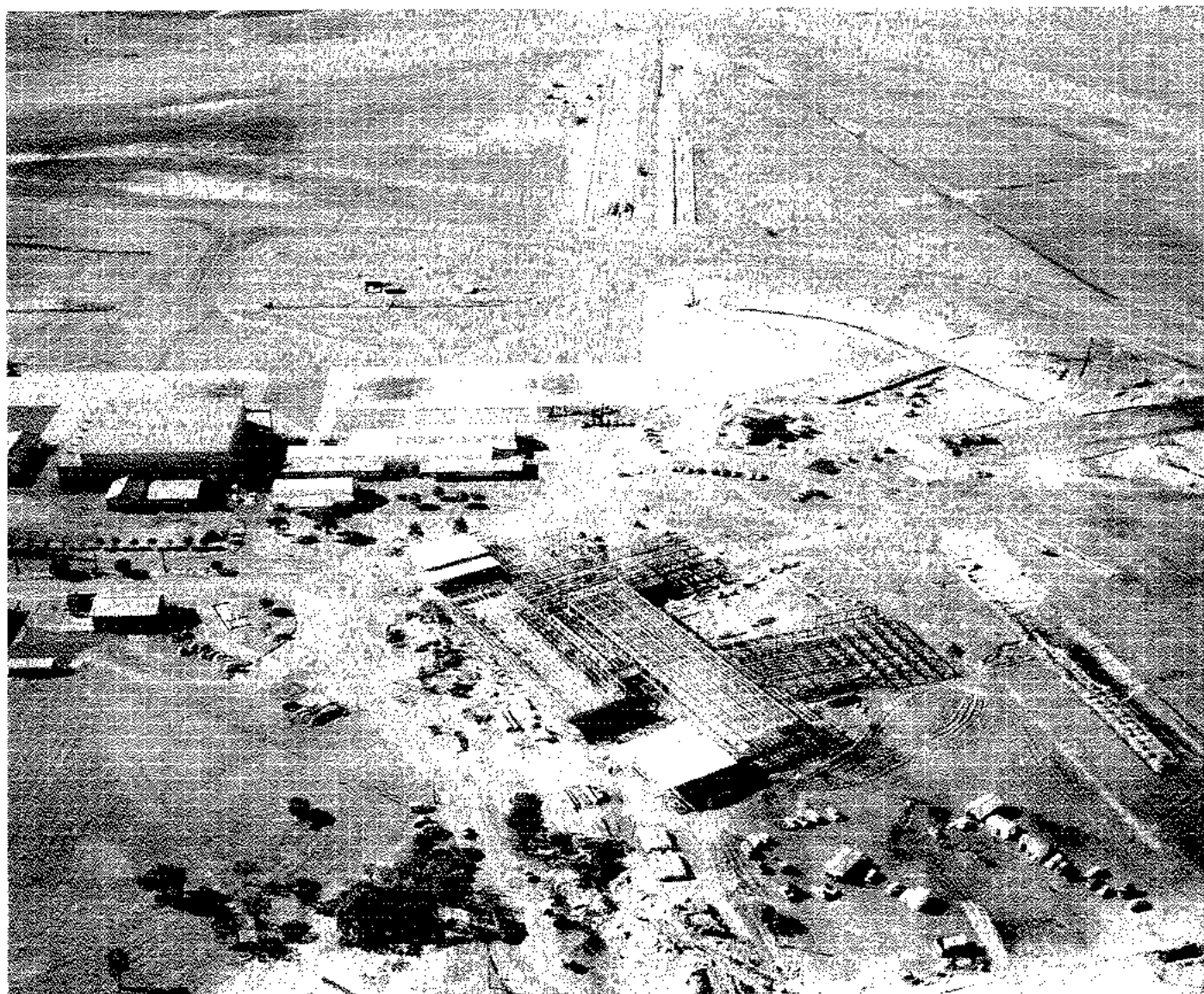
Land was chosen for a new Perth Airport site in 1938, part of an area granted to a John Scott by Governor Stirling.

Our file 42/715 Pt. 1 deals with the acquisition of the site and has an excellent acquisition and pavement layout plan in its file folder. It appears that the acquisition was completed in about April 1943.

#### Development of Perth Airport at Guildford

Initial development occurred in 1942 when an RAAF Fighter Strip was built by the Main Roads Department of Western Australia on 910 hectares of land. By 1944 there were two runways of 282 metres in length.

During the War years, Qantas Empire Airways had operated an international service with Catalina Flying Boats and converted Liberator aircraft between Perth and Colombo, Ceylon. With the cessation of hostilities the service reverted to its previous route from Darwin through Indonesia.



PERTH AIRPORT INTERNATIONAL TERMINAL UNDER  
CONSTRUCTION PRIOR TO THE BRITISH EMPIRE AND  
COMMONWEALTH GAMES 1962

After the War the North/East South/West runway was extended to 2116 metres and the North/South runway of length 2164 metres was added thus bring the number of runways up to three.

In the early 1950's it became obvious that flying training, still continuing at Maylands aerodrome, was posing serious air traffic control problems to Perth Airport, so planning was initiated to close Maylands.

All flying training was transferred to Perth in 1960. The final solution came with the opening in 1963 of Jandakot as a secondary airport catering for flying training, agricultural flying and executive and charter operations. The operators who transferred from Maylands to Perth in 1960 subsequently transferred to Jandakot in 1965.

During subsequent years, runways, aprons and taxiways at Perth Airport had been progressively improved, especially in 1966 with the extension of the North/South runway. At present i.e. November 1978 contracts are being prepared for resurfacing of part of the main 17<sup>0</sup> runway and for provision of sawn grooves in the new surfacing to meet the latest international standards of safety in wet weather. This will be the first such work in Western Australia.

#### Perth Airport - Buildings

The present Control Tower/Fire Station and two-storeyed Operations/Passenger Terminal Buildings were constructed at a total cost of \$1M and the new Terminal was opened in 1962 - a month prior to the British Empire and Commonwealth Games.

The International Terminal was extended in 1975 and there is now public pressure for a new terminal either adjacent to the existing one or on the other side of the runways. Passenger numbers have increased from 78,000 in 1953 to 854,000 in 1976.

### Bitumen Supplies

Voluminous Departmental Files 41/678 record correspondence about bitumen supplies and allocations in the 1941/47 period, because bitumen was a vital war material. Arrangements are included in the file for disposal of surplus American bitumen after the War.

A particular shipment of 114837 drums for the Allied Works Council from the ship S.S. Straat Soenda is prominently featured in discussions about priorities between ourselves, the Main Roads Department in Western Australia and some local authorities.

Well known names such as Ross MacIntyre who was Accountant and Executive Officer in this Region for many years and Mr R. Bishop of the Shell Company demonstrate their competence and careful accounting on the file.

A 1956 folio on the same file has some action over the signatures of the Director Mr L.C. Lucas and Director General Dr L.F. Loder. On the same folio other well known Western Australia Region names - Construction Manager Russ Cooper, Supervising Aerodromes Engineer Percy Cann, Principal Engineer Jim Utting, Construction Engineer Dick Kennedy and Works Supervisors Tom Robinson and Rex Ward.

Percy Cann was Supervising Aerodromes Engineer from 1949/58 when he resigned. At that time Learmonth reconstruction was 75% complete and he joined Bell Brothers at the Learmonth site. He had many interesting debates on the specification with Resident Engineer Dave Skewes and the new Supervising Aerodromes Engineer Jim Buchanan.

Jim Buchanan was Supervising Aerodromes Engineer from 1958 to 1965.



The only other permanent occupant of the Supervising Roads and Aerodromes position was Ray Hilton from 1966/74. After that, the positions were converted to the new Project Management concept. The Region's first Materials Engineer was Baden Clegg now a well known University of Western Australia personality.

#### Kalgoorlie Airport

In December 1927 the Commonwealth of Australia bought a landing ground site from Western Australia. This was one of many sites along the railway line. In 1942/43 a 96<sup>0</sup> runway was built and 800 metres sealed by the Main Roads Board in 1942. In 1946/47 we built a 06 runway, sealing it in 1948.

#### Carnarvon Airport

Prior to 1947 there were 4 runways. In 1964 the 44<sup>0</sup> runway was resheeted and sealed. A battle with sulphate reducing bacteria causing so-called salt attack was won in 1968 by the weight of seals.

#### Jandakot Airport

This new light aircraft facility was built in 1962/63. Jim Buchanan, Colin McWhae, Rod Purdy and Keith Hand had prominent roles in the project.

#### Aerodrome Expertise

A May 1950 report from 'The Design and Construction of Aerodrome Pavements' by H.T. Loxton then the Assistant Engineer for Roads and Aerodromes in our Central Office provides an interesting comparison between the then current American practice and ours.

An excellent summary of Departmental practice is found in a series of papers published in the Commonwealth Engineer in 1959. It reports a 1958 Koerner Memorial Lecture program arranged by Mr R.H. Cochrane then the Chief Roads and Aerodromes Engineer for the Commonwealth Department of Works.

His deputy was Mac Beavis who was probably in Darwin at that time.

Part 1 of the lectures was 'Flexible Pavements' by Mr H.C. Williams then the Senior Engineer for Roads and Aerodromes. Included in the text is a report that 'relatively recently several 100 tonne rollers on 4 wheels at 160 p.s.i. have been put into service and the Department also has 200 tonne rollers on 4 wheels at 150 p.s.i.'. This is a reference to the Macro and Porter Super Compactor rollers.

The use of these heavy rollers is very important in the development of Perth Airport and many other runways because of the increasing wheel loads and tyre pressures of developing Civil Aviation.

Part 2 of the lectures titled 'Rigid Pavements' was written by A.S. Reiher then the Supervising Engineer and later Director General of our Department.

The section 'Construction Procedures for Concrete Pavements' was written by H.C. Williams.

At that time another distinguished Australian pavements engineer Dr L.F. Loder formerly with the Country Roads Board, Victoria was Director General, so pavement expertise in the Department was plentiful.

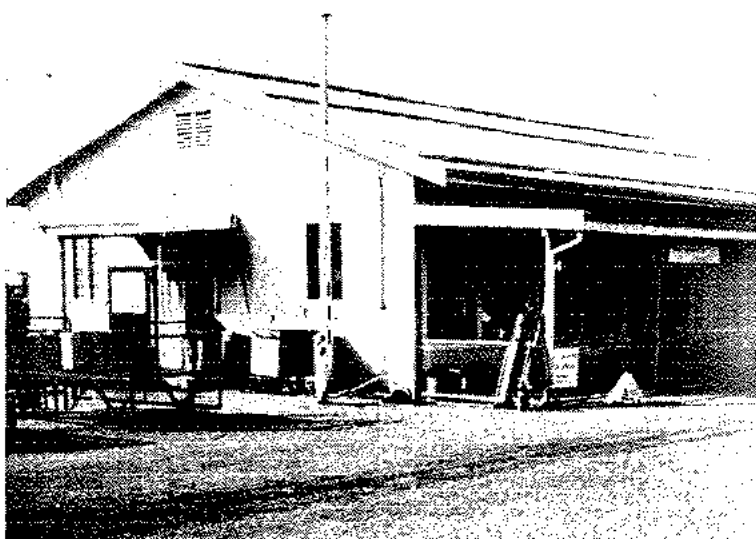
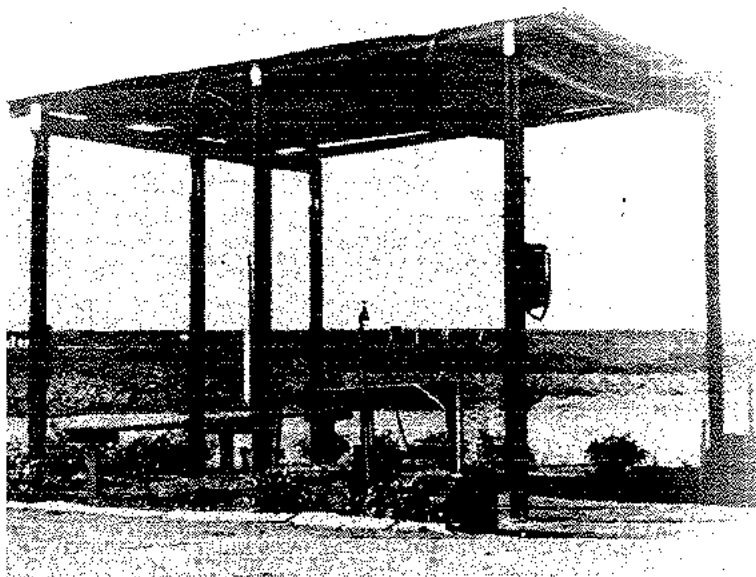
The above papers represent a thorough summary of good practice in Aerodrome pavements which is surprisingly current 20 years after it was written.

MAL DENNETT

References: Archives Files

Regional Aerodrome History Plans

Regional Department of Transport Library



PORT HEDLAND  
AIRPORT  
TERMINAL BUILDINGS

## 9. MARINE TRANSPORT

### LIGHT HOUSES

The Commonwealth Marine Transport Branch was established in Western Australia soon after World War I. Prior to this the Harbour and Lights Department of the Western Australia State Government was responsible for the building and maintenance of the navigational aids to coastal shipping.

The lights which the Marine Branch took over were generally very solid and cylindrical in shape. For example, Cape Leeuwin and Naturaliste were masonry towers, while Pt. Moore (Geraldton), Cape Leveque and Rottnest were of bolted steel plate construction. From the outset the Department of Construction maintained the structure and the necessary out buildings and facilities associated with them. As developments occurred in the design and workings of the lights, so the department modified existing structures as necessary to accommodate the improvements.

Besides erection and re-erection of light houses, the Department of Construction has undertaken works involved with facilities associated with these utilities. Examples of this are found at Cape Leveque where the Department constructed new residences, powerhouse and provided a bore water supply as well as reconstruction and maintenance of the airstrip and at Troughton Island where a similar works were done. As with most of these projects, conditions were arduous, and usually required the back up of the light house service vessels.

With the growth of mineral exports from Western Australia in the late 1950 so did the need for additional navigational aids for the large ships serving areas, such as the Pilbara, Dampier and Yampi Sound.

The Department of Construction, as the service Department for Shipping and Transport was called in to evaluate potential sites for new lights, to carry out feasibility studies, and to assess environmental effects.

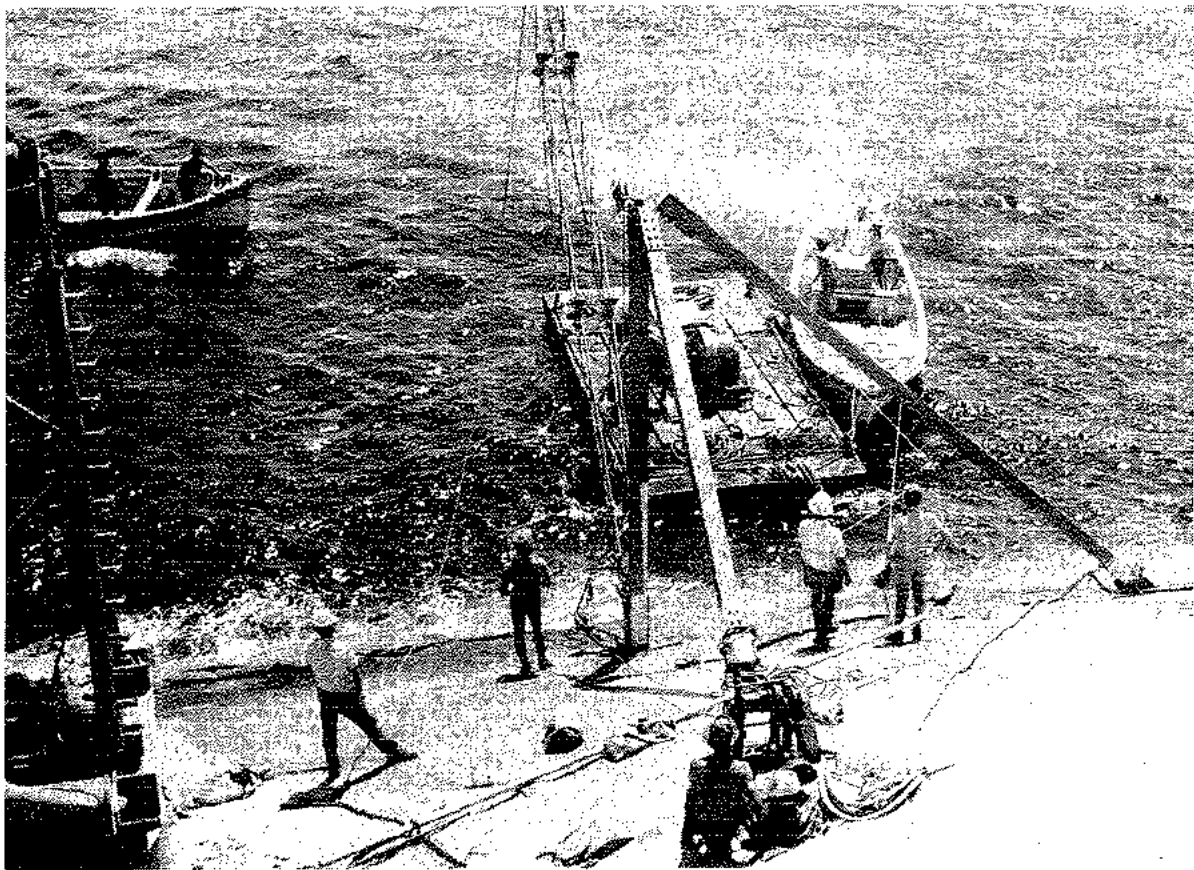
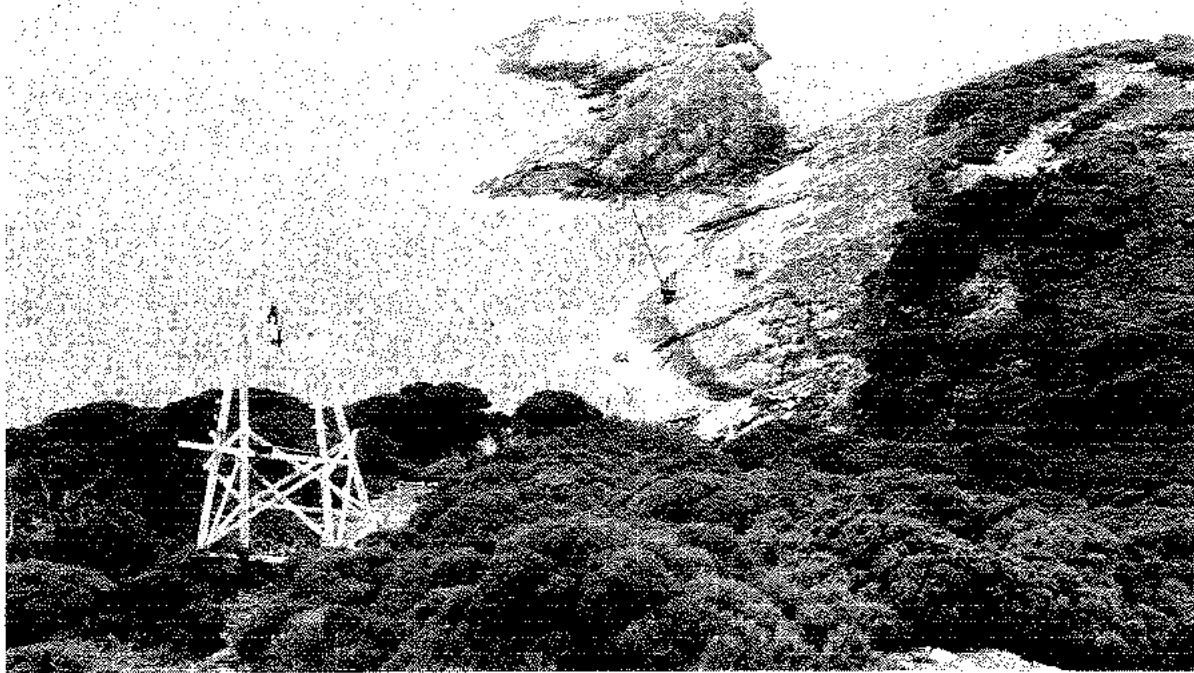
Observations have been made of the performance of materials and structures used in the extremely hostile environment. Earlier towers such as at Adele Island are mild steel lattice type. As corrosion is a severe problem with this material the much more expensive stainless steel is now used.

The initial cost of using this material is high, but since any maintenance work on these stations is expensive, requiring as it does the mounting of a ship based operation, the use of stainless steel is essential for these structures.

Oddly enough another factor affecting the design of these structures in remote areas is that of vandalism. As a result, stainless steel towers such as Rowley Shoals and Pelsart Island were cylindrical with an absolute minimum of external fittings.

A high degree of co-operation between the two departments is needed for the construction of the lighthouses. The sites of these lights are generally remote and exposed, making access difficult and service conditions severe. The construction phase involves the light house service vessels to transport men and materials to the site and to provide accommodation while construction proceeds. For these reasons it is usually more convenient and economical to use Day Labour for construction, rather than a contractor.

Supervisor Max Case, from this region has supervised the building of about 20 towers in Western Australian waters. Because of his personal involvement in so much work of a special nature in isolated areas, he was awarded the B.E.M.



ECLIPSE ISLAND - 1974

As will be seen by the notes below, the erection of towers was not always the most complicated part of the exercise. For example, at Eclipse Island, merely getting ashore was a major operation. Another example is that at De Gerando Island the construction team had to construct a monorail for a self-propelled wagon and have it operational before they could move equipment up the hill to construct the light house. Some typical examples of the tasks undertaken by Construction for shipping are presented to show the variety of the work and the conditions under which the work was effected.

### ECLIPSE ISLAND PROJECT

The task was that of improving access onto the Eclipse Island light house station. The island, approximately 800 metres wide and 2 kilometres long is located 6 kilometres south of Albany. It rises above sea level at its peak, with sheer granite cliffs 30 metres high around most of its rugged coast. The light house was built in 1926 and is situated on the island's summit. It was attended by three keepers and a fortnightly ferry service catered for the needs of the keepers and their families. Before new access was provided, personnel and goods were lifted ashore by means of a stiff-legged derrick and taken to the island's summit by flying fox. Because of the age and condition of this equipment it was considered necessary to replace it. The new means of access comprised the following facilities:-

A two-ton crane with bucket attachment to transfer personnel and goods from boat to shore.

An unloading platform near the crane, a tram-way trolley up the steep grade of the rock face, and a storage shed and platform at the summit.

Approximately one mile of roadway to the light house.

### Construction

During the early stages of construction a stiff-legged derrick was erected adjacent to the proposed crane site. This was used to unload material and equipment for the project and also

for assisting in the erection of the heavier crane components. Approximately 200 tonnes of construction gear were brought ashore in motor boats from the Commonwealth light house ship M.V. Cape Don and unloaded with the derrick. A temporary winch was fitted to the crane and the heavier mechanical components such as the diesel generator, trolley winch and landrover were lifted ashore and landed on the lower platform. From there they were winched up the rock face on the tramway trolley. The one mile of road from the top of the tramway to the island's summit was constructed by a tractor brought ashore in sections and assembled on the island.

#### Crane Operation

Crane movements were controlled by an operator standing on a platform further up the slope. Because of the difficulty in keeping a boat under the crane hook in rough seas, the crane had two speed operation.

#### Trolley Operation

The trolley which travelled over the steeper section of the slope, was raised and lowered by two steel cables. In the event of one cable failing, the trolley is held with the other and a brake is automatically applied to the winch. Both crane and trolley had devices built into them to maintain a safe operational standard. They were electrically operated, power being supplied from a diesel generator. Due to the cost of maintaining this light station, and the risky nature of sea landings - there have been several mishaps involving personnel - it was converted to an automatic station in 1974 and is now serviced by helicopter.

#### IMPERIEUSE REEF PROJECT

The site for the tower was Rowley Shoals, in the Imperieuse Reef area 300 kilometres west of Broome. The reef in which they lay has formed rises almost vertically from the ocean floor 216 fathoms below and it has attracted a large colony of sharks and rays, which make swimming dangerous. Here



the Department's construction team had to build a stainless steel light-tower and automatic weather station 36 metres high on a sand cay only 300 metres long and 30 metres wide. The construction team was taken to the reef on the light house vessel M.V. Cape Pillar which anchored in safe water nearly 3 kilometres from the cay. Two amphibious LARC vehicles were used to ferry the men and their equipment, plant and construction materials to the site. The men camped ashore in tents but remained ready to leave at short notice for the safety of the support ship, should the weather deteriorate because, in high seas, waves pass right over the cay. The operation involved excavating a 70' square area to a depth of 5' 6", driving 12 heavy piles 26' into the coral, laying a reinforced concrete base, joining the eight prefabricated tower sections, and erection of the tower using scaffolding, winches and lifting tackle. High winds stopped all work on the scaffolding for two days during the lifting operation. However, the project was carried out over a period of about five weeks and was completed in June 1970.

GRAHAM CROCKFORD

## 10. DEFENCE PROJECTS - ARMY

When Australia was settled by Europeans some two hundred years ago the Army was very much in evidence and during the early years of settlement filled many roles. Since those early days the Army has played a significant part, on and off the Battlefield, in the development of Australia's nationhood.

The Department of Construction under its various official names such as Construction, Housing and Construction, Works, Works and Housing, etc., has provided a Major and Minor Works service as well as a cyclical maintenance programme for the Department of Army during the past fifty years.

Many officers of the Department of Construction have had close ties with the Department of Army over the years, not only from a work situation point of view but also from service in the Army during the 1939-45 war. In fact, four of our eight Directors were in the Army, including the current Director, Col. F.W. Statham and the late Brig. L.C. Lucas.

The prewar facilities provided for the Department of Army do merely by their listing tell a history of the activities that took place at that time. The short list provided below demonstrates the point.

GUILDFORD	Erection of Laboratory, Office and Quarters. Completed 1926, Cost \$3,156.
GUILDFORD	Water Supply for fire purposes. Completed 1929, Cost \$2,470.
SWANBOURNE	Extend Rifle Range. Completed 1935, Cost \$3,102.
ROTTNEST	Construction of 4 miles of Railway. Completed 1936, Cost \$33,312.
ROTTNEST	Construction of 9.2" Reinforced Concrete Gun Emplacements. Completed 1938, Cost \$110,688.

SWANBOURNE	Construction of 6" Gun Battery Completed 1939, Cost \$16,800.
PERTH	Erection of Drill Hall - Bazaar Terrace. Completed 1939, Cost \$19,105.
PERTH	Erection of Drill Hall - Lord Street. Completed 1939, Cost \$13,215.
ROTTNEST	Erection of Workshop Buildings. Completed 1939, Cost \$16,735.

During the war construction for the Department of Army continued and some of the projects completed were:-

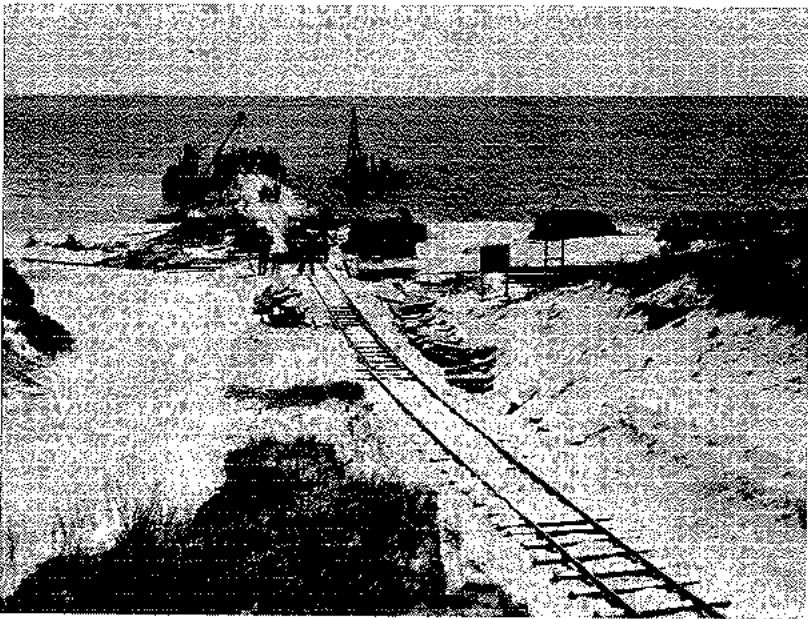
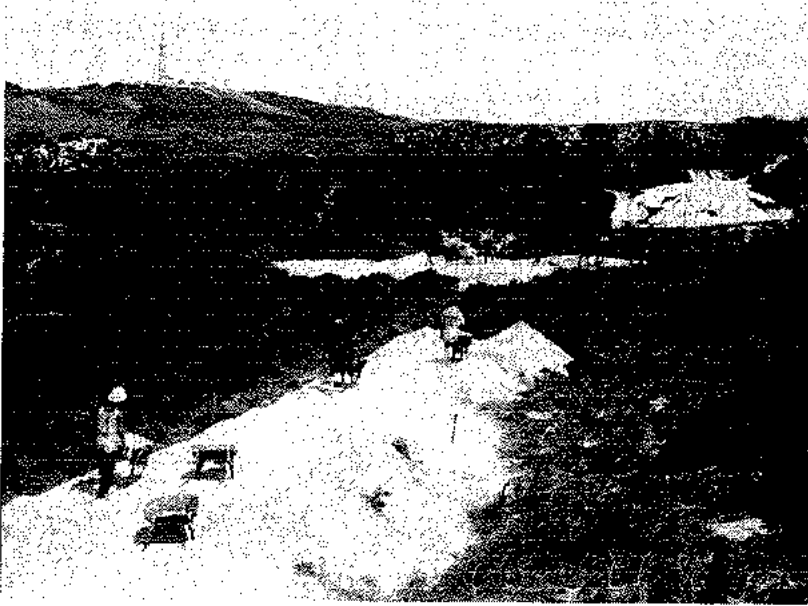
ROTTNEST	Construction of 6" Gun Emplacement at Bickly Point. Completed 1940, Cost \$23,153.
ROTTNEST	Erection of Fire Command System. Completed 1940, Cost \$28,497.
KARRAKATTA	Erection of Drill Hall. Completed 1942, Cost \$32,325.

#### Rottnest Island

Some projects completed for the Department of Army traced the history of a particular place and record events and facts little known or forgotten.

Such a project was the 4 miles of 3' 6" gauge light railway constructed at Rottnest Island in 1935/36, which ran from the deep water jetty to two gun emplacements and the Army Barracks.

At about this time all Naval Stores were moved from the Henderson Naval Base site to Fremantle thus allowing approximately 200 chains of Commonwealth railway line, railway sleepers, trucks and permanent fittings to be transferred to the Military Board and shipped to Rottnest for use in the construction of the new line.



4 MILES OF RAILWAY  
UNDER CONSTRUCTION  
AT ROTTNEST ISLAND  
1935-56

When the Naval Stores were transferred to Fremantle the Navy was paying the State Railways \$20 per annum to maintain the Naval Base siding.

The jetty at Rottnest was extended approximately 50 feet into deeper water and a Dolphin Gantry erected nearby to transfer heavy defence guns from barges to railway wagons; thirty railway wagons were reconstructed for the purpose.

Conditions on the Island were far from ideal because at one time during the course of the contract for the railway line the Department of Health reported on the number of men suffering from diarrhoea, the very poor quality of well water being used, unhealthy sanitary arrangements and an abundance of flies which was accentuated by the number of quokkas shot for sport and left to decompose where they fell. All food was kept in safes made of chaff bags which were considered flyproof - probably the old Coolgardie Cooler.

A press report of 15 January 1936 covering the various works in progress at Rottnest Island stated in part -

"The path from the settlement to the new bathing boxes on the shore of the Government House salt lake, too, has been made attractive, and has been covered with shell.

The rails on which the old horse trams used to run from the settlement to the jetty have been used as borders to this path, and they answer the purpose admirably.

Incidentally, the old trams are still in existence, though they are very dilapidated. They stand nowadays near the Salt Works, on the south side of the Causeway."

To add to all the other difficulties encountered during the course of the contract the final crunch came when it was discovered that the four wheel drive locomotive rear wheels were approximately 1" narrower than the rails.

Despite transport difficulties, site conditions and numerous other drawbacks the work was completed shortly after the original completion date.

Post war activities were somewhat restricted by the lack of materials and skilled tradesmen to perform the necessary works. The Department of Construction was vitally concerned about the lack of building materials and in order to avoid using materials that were urgently needed for housing projects, undertook to import materials from wherever they were available in the world.

#### Swanbourne

Seward Village, adjacent to Swanbourne Army Barracks, was a fine example of an imported pre-fabricated housing project which helped alleviate the accommodation problem of Service personnel and their families.

Much development and improvement has taken place at Swanbourne with the building of Barracks Blocks, Parade Grounds and garden areas etc. However, this was not without its problems in the developmental stages.

Due to the amount of cutting, filling and levelling and the lack of accuracy as constructed drawings, it was uncertain where water and other service mains were located throughout the area. To avoid weeks of costly investigation the Department of Construction played a long shot and called on Jack Downie, a retired employee who had worked at Swanbourne for many years, to help where he could.

Much to Jack's delight and the Department's relief he was able to walk around the Camp and say there is a manhole so many feet down there or there is a main running through here.

Since then of course dramatic changes have taken place in and around Perth and some Army facilities have had to make way for the growth and development of recent years.

The volume of work done for the Department of Army has varied over the years and while other Departments may have had larger programmes more consistently the work for the Department of Army has presented its challenge by its very specialised and technical nature and drawn on the architectural, engineering and supervisory resources of the Department of Construction.

It is certain that in the future the Department of Army will pursue a specific role and whether their programmed facilities are low key or otherwise they will present a challenge the Department of Construction will meet with the same enthusiasm and expertise previously demonstrated.

MARTY CROWE

## 11. ROYAL AUSTRALIAN NAVY

The development of shore facilities for the Royal Australian Navy in Western Australia since Federation has taken place in four main phases.

### 1. 1910-1920 Cockburn Sound

In 1910 Admiral Sir Reginald Henderson was commissioned by Fisher's first Labour Government to report upon an Australian Naval Defence Scheme.

As a result of the Henderson report which recommended the establishment of a Naval Base in Cockburn Sound, the Government resumed the whole of Garden Island and a strip of land 6 miles long and  $1\frac{1}{4}$  miles in width on the mainland including Woodmans Point, Quarantine Station and the Magazine Area.

The renowned consulting firm of Messrs Coode, Matthews, Fitzmaurice and Wilson was retained to prepare plans for the Naval Base which was to encompass Woodmans Point and Jervoise Bay.

The resulting scheme called for the enclosure of approximately 1000 acres of the Sound within rockfilled breakwaters dredged to a depth of 35 feet. It provided land backed berths and pens for 4 armoured cruisers, 5 protected cruisers, 6 destroyers, 9 submarines, 1 destroyer repair ship and 1 fleet repair ship. In total it was expected that a complement of some 7500 men of all ranks would be attached to the ships and the base. The estimated cost of the work was said to be £7M to be spread over 15 years of construction.

In 1913 the Minister for Defence, Senator Pearce, formally commenced construction and some 300 men were recruited to carry out the construction program.



By 1915 the pressures of the Great War had taken much of the impetus from the construction and funds were diverted to works on the East Coast. The consultant's plans were progressively modified or redesigned by the Board of Naval Works.

1918 saw the virtual cessation of all site works at the Henderson Naval Base as it had been named but it was not until 1921 that the project was officially abandoned.

In the period 1909-1921 a sum in excess of £1M was expended. The only remnant today is the westerly breakwater spur of the Cockburn Power Boat Association launching ramp area. The early dredging of the channels through Parmelia and Success Banks was incorporated into the existing deep water main navigation channels.

Naval facility construction lay dormant in Western Australia during the 1920 and 1930's until the outbreak of World War II.

Because of its strategic importance in the sea war against Japan, Fremantle was rapidly converted into an operational base.

## 2. 1940-1950 Fremantle, Preston Point and Byford

Through the auspices of the State Construction Authorities the Allied Works Council arranged for the construction of oil tank farms and bunkering facilities in both East and South Fremantle. Oil fuel was piped to the wharves. A slipway capable of slipping Submarines and smaller escort vessels was constructed at the southern end of Victoria Quay.

Shore facilities for submarine operation were constructed alongside the wharves at Fremantle although the main technical support was rendered by the submarine depot ships.

Temporary stores were constructed throughout Fremantle and its environs and at Woodmans Point.

During this period the Navy spread its operations and M.Q. to the Preston Point area where extensive temporary timber hutments were constructed to house the Naval Operations in Western Australia.

These buildings were to serve the Navy for at least 20 years after the cessation of hostilities.

A major explosives and armament storage Depot was developed at Byford.

The Fremantle slip was retained by the State Government after the war and has enjoyed a useful life servicing the requirements of coastal and harbour shipping. It is of interest that with the advent of H.M.A.S. Stirling, arrangements will be made with the Public Works Department to modify the present slipway to enable Oberon class submarines and destroyers to again use this facility for mid cycle dockings.

In the last two years the Department has completed major works associated with the refurbishing of the oil fuel storage systems in Fremantle and their pipe lines to the wharves in the harbour.

With the cessation of hostilities in 1945 the Navy consolidated its position at Preston Point by the construction of a major brick Headquarters building commenced in 1946. In 1952 the Officers Wardroom was also built by the Department to become the second permanent building of the H.M.A.S. Leeuwin complex.

### 3. 1966-1969 Development of H.M.A.S. Leeuwin

It was not until the mid 1960's that the Department of Works was again to become associated with the reconstruction of this establishment.

At this time H.M.A.S. Leeuwin had become the major training centre of Junior Recruits for the Navy in Australia. Lads of 15 were inducted into the service, received two years of

concentrated schooling and naval training and were then posted to specialised training establishment in other parts of Australia before ultimately being assigned to their career operational role.

H.M.A.S. Leeuwin was to become one of the largest boarding schools in Australia catering for 15-18 year old boys. At any one time the establishment was finally developed to a capability of training some 800 junior recruits.

In 1965 it was obvious that the existing old wartime timber hutments and general layouts were totally inadequate for the task and as a result the rebuilding of H.M.A.S. Leeuwin was the subject of a PWC hearing in 1966. The subsequent Parliamentary approval required the Department of Works to proceed with a building program of some \$7M to replace the old timber buildings with modern comfortable brick construction to suit the training school role.

The construction program was complicated due to the fact that the training role of H.M.A.S. Leeuwin was expanding and could not be disrupted, space within the Preston Point area was extremely limited, the existing layout of engineering services and their conditions were totally inadequate for the new developments and the facilities were urgently required.

So between the years 1966-1969 H.M.A.S. Leeuwin was reborn as a modern Naval training establishment. In that time the construction work included -

- (a) Refurbishing of water supply sewer and electrical reticulation.
- (b) Reconstruction of the road, car parking and parade ground areas.
- (c) Construction of a major classroom block and its subsequent extension.
- (d) 2/3 storey Barracks and 2/4 storey Barracks.

- (e) Kitchen messing and recreation block for 800 junior recruits.
- (f) Gymnasium.
- (g) Swimming pool, change rooms and armoury.
- (h) Petty Officers Mess and Quarters.
- (i) Stores Utility Building and Transport Compound.
- (j) Shipwrights Workshops.
- (k) Medical and Dental Centre.
- (l) Guard House and Diving Building.
- (m) Department of Works Depot.

The work was shared between 10 major contractors and a sizeable contribution was made by the Department's Direct Labour team in providing services and the linking of the contracts.

#### 4. 1966-1978 H.M.A.S. Stirling

During 1966 the Navy approached the Central Office of the Department of Works with reference to the feasibility of constructing a Support Facility on the Western seaboard of Australia.

Proposals were invited from leading consultants to conduct this feasibility study in conjunction with the Department and in May 1967 Maunsell and Partners were commissioned.

A most comprehensive report was presented to the Department by the consultant in November 1967 which recommended the establishment of the Support Facility at Careening Bay on Garden Island in Cockburn Sound. The Department endorsed the proposal of the consultant and recommended them to the Department of Navy.

In 1969, the then Prime Minister, John Gorton announced that an immediate start would be made on the construction of a Naval Support Facility at Garden Island. It was also stated that work would physically commence during the 1970-71 fiscal

year and that the Facility would be operational by December 1975.

#### Project Management Arrangements

The Department's task was made more difficult and complicated because the Project was not exempted from the formal PWC procedures.

Because of the magnitude of the task special arrangements were made for the day to day control of the development of the Project. A Project Planning, Co-ordination and Review Committee chaired by the Director of Works (Mr F.W. Statham) and comprising senior members of Departments of Defence, Navy, Head Office of Works and the Project Team was set up at an early stage.

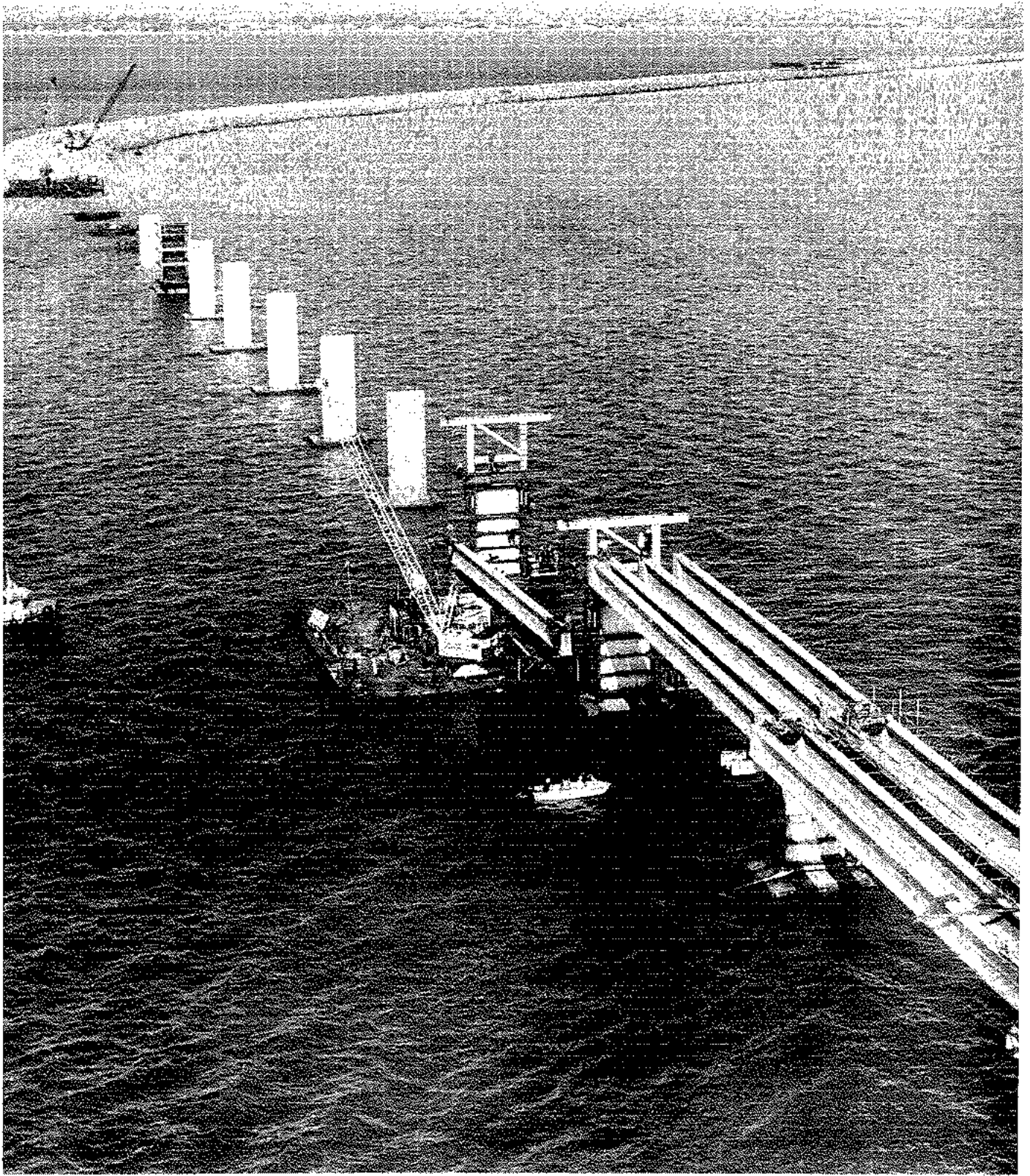
The Region created a Project cell under the leadership of the then Construction Manager (F.J. Buchanan) to be responsible for the design and construction. This position was known as the Project Manager Cockburn Sound and was introduced three years in advance of the formal Project Management organisation now generally adopted throughout the Department.

The Navy in turn appointed Capt. Alec Townsend to be the Project Liaison Officer as a one point contact for the development of the Facility.

These arrangements made in 1970 were to remain in operation throughout the whole length of the Project and attest to the efficacy of this method of Project control.

#### The Causeway

To meet the time limitations imposed by Government the Project was divided into two stages viz. (a) the Point Peron/Garden Island Causeway and (b) the Naval Support Facility. It was obvious that no construction work could commence on Garden Island until the road link (Causeway) was established with



GARDEN ISLAND CAUSEWAY CONSTRUCTION 1972

the mainland and so all efforts were concentrated to this end.

Drawing on resources both in and out of the Department, intensive investigation, planning and design operations were introduced culminating in a PWC hearing in September 1970. The resultant Parliamentary approval was followed almost immediately by the invitation of tenders for the first stage of the Causeway. Work physically commenced on 4 January 1971.

Today, the planning and implementation of the construction of the Causeway would be fashionably known as 'fast tracking'. It involved concurrent contracts, consequent contracts, preordering of long delivery materials and generally exercising considerable engineering judgements where perhaps the investigation information was not quite as adequate as one would have desired.

Suffice to say that through a combination of good engineering, good contracting, good planning, good luck and good weather the massive task was completed within the scheduled time and the estimated budget.

The Causeway was officially opened to traffic to Garden Island on 8 June 1973.

The Causeway involved the construction of a steel and concrete low level bridge 1000 feet long, a 17 span pre-stressed concrete high level bridge 2020 feet long, and the construction of 3 rock rubble mole sections totalling some 10,800 feet in length and involving the placing of approximately 1,000,000 tons of limestone and 400,000 tons of granite armour. The completed cost was \$9.5M.

All three major Causeway contracts were won by Taylor Woodrow International and the on-site supervision for the Department was carried out by Resident Engineers, Bernie Cornish and Laurie Humphry.

Maunsell and Partners designed the high level bridge and the Maritime Branch of the Department under the direction of Mr A. Hicks produced the documents for the rock filled moles section. The Western Australian Region under the supervision of Mr George Clarke designed the low level bridge section.

#### Garden Island Facilities

Concurrent with the awarding of the contracts for the Causeway the design development work for the Facilities on Garden Island commenced. It is interesting to compare the size and scope of the 1972 plan with the 1911 project, described earlier in this chapter. H.M.A.S. Stirling was designed to cater for 4 destroyers, 3 submarines and a total complement of ships and shore establishment of approximately 1500.

The awakening public interest in environmental matters had become quite pronounced during the Causeway PWC hearing so it was no surprise that at the April 1972 PWC hearing for the Support Facility that these environmental consideration had become the major issues.

After a long and at times acrimonious series of sittings, the Committee recommended to Parliament that the works as planned should proceed forthwith.

During the early part of 1973 a series of major contracts were awarded based on access via the Causeway in June 1973 and an ultimate occupation by Navy in January 1976.

August 1973 saw a significant program change introduced by the Whitlam Government.

Major elements of the Facility notably the Large Ship Berth Armament Depot and Armament Wharf were indefinitely deferred or deleted, cash flows were drastically reduced and the overall completion date of the modified Facility was extended to December 1978.



These directives introduced a general slow down in the construction tempo involving the cancelling of some contracts and the deferring of the commencement date of others.

The return to power of the Fraser Government in December 1975 saw an immediate requirement to increase the scope of the Facility by the addition of the deferred Armament Jetty and the acceleration of the overall completion date to March 1978.

Contracts were arranged accordingly and it is now a matter of record that H.M.A.S. Stirling was commissioned on 28 July 1978 some 3 months after the physical completion and handing over of all the associated facilities.

Between the years 1973-1978 some \$37M was expended on construction works on Garden Island. In all the cost of works involved totalled some \$100,000,000 in 1978 money value.

#### H.M.A.S. Stirling Statistics

##### Water Supply

First Class supply from Serpentine Dam system over the Causeway.

Tank storage 2/3400 kilo litres.

Second Class system from 2 artesian

bores	...	390 metre deep
flow rate approx.	...	60 kilo litres per hour

Length of first class reticulation ... 26.5 km

Length of second class reticulation ... 18.5 km

##### Sewerage

Treatment by anaerobic and aerobic lagoon system.

Effluent chlorinated and disposed of by soakage.

Length of gravity mains      ...      ...      46.2 km

Length of rising mains      ...      ...      4.3 km

There are 5 pumping stations.

#### Electric Power

15 mega watts supplied by S.E.C. across Causeway.

On the island there is the capability to convert the  
50 cycle power to 60 cycle and rectify from AC to DC.

Auxillary power of 3 mega watts automatically available  
within 25 seconds.

Most of the Facility Power is underground.

High Voltage      ...      ...      24.8 km

Low Voltage      ...      ...      6.7 km

Supervisory      ...      ...      43.9 km

Street Lighting      ...      ...      16.3 km

#### Building Work

50 buildings have been constructed to date ranging from  
small pump houses to major office and workshop complexes.

In round figures:-

Gross Building Area approx.      ...      35,000 sq. m

Number of Bricks used      ...      2,250,000

Number of Tiles used      ...      220,000

Cubic Metres of Concrete      ...      6,300

Tonnes of Reinforcing      ...      385

Tonnes of Structural Steel      ...      650

#### Wharves

Escort Wharf      305 m length dredged      ...      9.7 m

Submarine Wharf      213 m length dredged      ...      11.0 m

Armament Wharf      153 m length dredged      ...      11.0 m

extends to 213 m length with dolphin.

#### Materials Involved

Dredging	...	670,000 cubic metres
Concrete	...	10,000 cubic metres
Reinforcing Steel	...	1,750 tonnes
Piles 560 mm	...	20 km
Pile H	...	1.3 km
Rock Pile	...	250,000 tonnes

#### Wharf Cranes

Two level luffing 10 tonne lift from -10 m below wharf face  
from 23 m outboard of wharf face to a height of 38 m.

#### Wharf Services to Ships

50 Hz various voltages  
60 Hz various voltages  
Fresh water  
Distilled water  
Salt water  
LP Air  
HP Air  
Lubrication oil  
Oil sullage  
Sewage discharge  
DC Power (submarine only)  
Steam

Refuelling is by oil lighters

#### Small Boat Camber

280 m of wharf face in excess of 5 m depth.  
7 small craft pens in excess of 3 m depth.  
Remote mooring piles to accommodate dumb vessels.

Slipway capable of handling 300 ton vessel in damage condition.

Winch capacity of 15 tonnes reeved to 45 tonnes.

#### Roads

4.2 km in Causeway

Approx. 1 km in bridges

16.0 km on island

Associated stormwater drainage to roads pavement and buildings - 10.5 km of pipes

Hardstandings 74500 m<sup>2</sup>

#### Areas Involved in Facility

Total area of Garden Island	...	1200 hectares
Total area of fenced to exclude Public (including armament depot)	...	200 hectares
Area cleared for construction purposes	...	85 hectares
Area included in Security Fence i.e. Wharf & Workshop Zone	...	7.5 km

#### Accommodation

Junior Sailors Sleeping	...	3/72 = 216
Messing	...	250 eating ... cooking 400
Recreation	...	460
Senior Sailors Sleeping	...	42
Messing	...	86
Recreation	...	135

Officers Sleeping	...	20 Junior Officers
Messing	...	45
Recreation	...	40

#### Medical Centre

- 8 Hospital Beds
- 2 Dental Chairs
- Outpatients Facilities

#### Sports Facilities

- 1 Squash Court
- 4 Tennis Courts
- 1 Australian Rules Oval
- 1 Sports ground for soccer, rugby, hockey, cricket facilities
- 1 Boat Shed
- Change Rooms

The work was carried out by 12 major contractors i.e. contracts in excess of \$0.50M.

Messrs Ken Wylie and Terry Ryan at different times were responsible for the overall Project design functions. Messrs Lionel Bates and Terry Holten produced the distinctive architectural concept which was maintained throughout the building works and was instrumental in winning for Terry the 'Clay Brick Manufactures Award' in the year 1977.

#### NAVAL GUNFIRE RANGE - LANCELIN

To coincide with the commissioning of H.M.A.S. Stirling a \$0.5M Naval Gunfire Support Range was completed at Lancelin approximately 150 kilometres north of Fremantle. This project

involved the construction of an extensive road system, living accommodation, observation posts, target areas and safety markers all within an isolated area of coastal sand dune country.

#### UNITED STATES FACILITIES - EXMOUTH

Following the Government decree that there should be active Australian participation in the operation of the United States ULF Radio Station USS HOLT at Exmouth. The Region has been responsible for providing the works support for the Royal Australian Navy contingent associated with USS Holt. To date the effort has mainly been involved with housing.

JIM BUCHANAN

## 12. DEFENCE PROJECTS - AIRFIELDS

### Pearce

This RAAF base was established in 1935. Our archive files record a lot of building activity continuously until about 1940 as technical, administrative and domestic buildings were built of brick in single and two storey construction.

Initial wartime runways were 141<sup>0</sup>, 90<sup>0</sup> and 48<sup>0</sup>, typically in 6" thick gravel with a tar prime,  $\frac{1}{2}$ " size drag mix  $\frac{1}{2}$ " thick and a sand seal. Some concrete aprons were of 4" thick concrete.

In 1965, following the decision to move the flying training school from Point Cook in Victoria to Pearce, approval was given to provide facilities for jet training of pilots on MACCHI aircraft.

These facilities comprised an extensive building and engineering services development program at Pearce with Ken Crockford as Area Manager, and a new satellite airfield at Gingin with Mal Dennett as Resident Engineer.

Following the completion of these works by 1970, a new phase of development began with a PWC submission for works valued at \$5.5M in February 1970.

In 1979/80 facilities were constructed to cater for long-range maritime patrol aircraft (Orion). This work was projected by Norm Griffiths.

### Learmonth

Learmonth began as wartime construction of facilities known as Potshot. 4<sup>0</sup> and 65<sup>0</sup> runways were built by United States forces.

The facilities were subsequently used by West Australian Petroleum (WAPET) during the discovery of the first oil in West Australia in the 1950s.

In 1958 and 1959, the facilities reverted to the Commonwealth and were used during the resheeting and extension of the 4<sup>0</sup> runway by Bell Brothers Contractors. During this contract, a former Supervising Roads and Aerodrome Engineer, Percy Cann, was working with Bell Brothers on the project under the supervision of Jim Buchanan and resident engineer Dave Skewes.

In 1971 to 1973, major development took place based on a lengthened and strengthened 4<sup>0</sup> runway.

This was the last airfield project of Five Airfield Construction Squadron, with Keith Hand as Resident Engineer.

MAL DENNETT



13. DEPARTMENT OF SUPPLY - KARRAKATTA AND  
PERTH DEPOTS - TALGARNO PROJECT

Department of Supply as it functions in Western Australia region now grew from a Munitions Stores Light Transport section attached to the Department of Supply during World War II. The section operated with the Department of Supply from the Welshpool munitions complex during World War II. From the conclusion of the War it assumed the Storage-Light transport role in which it now serves for other Commonwealth Departments.

The Welshpool site and buildings were passed from the Commonwealth to the State Government in 1947 for use in attracting secondary industry to Western Australia. With the handover of buildings and site the Department was moved to the Karrakatta depot site. The site which the Workshop and Stores Section currently occupy is on land which was owned or allocated to the Army.

Accommodation on the site was provided in a variety of buildings of wartime origin dismantled and transported from a number of locations in Western Australia. Two of the 'Bellman' hangars which remain at the site were brought from Geraldton and the other from Merredin. The Office building consists of two wartime accommodation blocks transported from another location. The weighbridge and Guardhouse were brought from Welshpool.

Buildings were transported to the site by Department of Supply and erected by Department of Works Day Labour teams. There were no new buildings provided. Since that time the only major work of significance on the site has been the erection of a new store. Effected under contract let in 1962, by the Department of Construction to Redell and Tarikata, it cost £65,185. The Works project team was Dick Kilpin, John Hallman, Architects and Alf Hewitt, Works Supervisor.

The Light Transport group was located initially in premises in Wellington Street then in Bazaar Terrace. Subsequently, the group was relocated in 1950 in Vettters Garage in Murray Street. From there it operated until completion of the Light Transport Depot and offices in Wellington Street.

Following purchase of Vettters Garage, a fire sprinkler system was installed under contract by the Department of Works. This was Works' principal involvement except in a maintenance or minor works role at this facility.

Provision of the Light Transport Depot and Offices in Wellington Street was effected under contract to Department of Works by Universal Constructions at a cost of approximately \$300,000. Construction work commenced July 1967. Department of Works' officers principally involved on the project were Ted Cartwright, Bob Hunter, Vic Mucciarone and Jim Walker.

#### TALGARNO PROJECT

The most significant project effected in this Region for Department of Supply by Department of Works was the Talgarno project. This project was conceived in the mid 1950's - a result of feverish development of a deterrent intercontinental ballistic missiles program by the United Kingdom. As a contribution to this program the Australian Government made land available together with scientific and construction expertise to provide assembly, launching and test firing range facilities for the rocketry. The Weapons Research Establishment (WRE) of the Department of Supply was charged with carrying the Australian contribution on behalf of the United Kingdom Ministry of Supply (UKMOS) who funded the work. The major Australian concentration of effort was located at Woomera and Salisbury in South Australia.

In order to establish the accuracy of guidance systems an isolated uninhabited corridor of land extending from Woomera to the north west coast between Broome and Port Hedland was selected as the firing range. The principal target zone was expected to be some 50 miles inland from the coast.

Late in 1958 the terminal facility site, code named TALGARNQ was finally confirmed at some 130 miles south of Broome adjacent to Anna Plains Station, and a firing date for the BLUESTREAK rocket was set for late 1960.

Amid an atmosphere of 'cloak and dagger' security, the Region set about a 'crash' construction program to produce this major facility, the purpose of which, was to provide pleasant living and working conditions for visiting scientists for extended periods, workshops and stores for special equipment, radio communications, range observation posts and also the necessary infrastructure to enable the facility and its equipment to be maintained at peak efficiency between firings.

To overcome the inherent organisation problems of the old discipline/design/construct management concept in March 1959, the Director of Works, Mr R.M. Baxter, appointed an Executive Engineer (Mr F.J. Buchanan) to be responsible directly to him for co-ordination of both design and construction within the Region and for liaison with WRE and our Central Office for the Talgarno Project.

The difficulties facing the Region were considerable. Road access, access by air and communication with the site were primitive. Materials transport to site was restricted by load capacity of wharves at Port Hedland and Broome. Materials had to be either shipped or railed to Geraldton and Meekatharra and shipped or trucked to site. The site was inhospitable and could not offer readily available water or construction materials. Security provisions for the site and uncertainty by UKMOS of their requirements and funding complemented the problems of the remote site.

Cost of works in the Talgarno facility was to be of the order of £4M.

Provision of base camp facilities to accommodate construction teams was the primary objective.

From selected tenders a contract was awarded to a consortium of A.T. Brine & Sons and Edwards and Taylor for the erection of the construction camp, construction office, power station building and the water supply and sewerage reticulation, all to be completed within 14 weeks, together with a further 10/3 bedroom houses within 24 weeks.

George Moss Pty. Ltd. was awarded the contract for supplying and installing 4 diesel generating sets, totalling 1.2 Mw, progressively, the first to coincide with the completion of the camp. Similarly, Barrow Linton Pty. Ltd. contracted to provide the electrical reticulation including transformers and switchyards.

Roadworks for the access to the townsite area and the townsite roads were constructed by the Main Roads Department. The W.L. Sides drilling rig travelled overland from Sale in Victoria to Talgarno via Kalgoorlie, Leonora, Wiluna to drill and case a 1300 feet bore. Though a million gallons a day plus was obtained, it was too salty for large scale human consumption. As airfield compaction water it proved invaluable and justified the effort and expense.

J and E Ledger constructed the 300,000 gallon ground level and 50,000 gallon overhead water storage tanks which were subsequently connected to an alternative shallow ground water supply.

Concurrent with the establishment of the townsite a contract had been awarded to Perron & Sons for the construction of an airfield capable of handling DC6B's. Included in this contract, with tight time schedules, was provision for the opening of a quarry at Mt. Phire 20 miles distant for the supply of crushed screened concrete aggregates and concrete sand. These concrete materials were to be stockpiled for the balance of the construction work.

To coincide with the opening of the construction camp, on schedule in October 1959, a contract had been awarded to the Geraldton Building Company for the first of the major complexes associated with the Terminal Facility. They were to construct the single quarters and the main kitchen mess and recreation building (approximate value £0.5M) in 8 months. It was here that the long and successful association between GBC and Department was begun.

It was not with any great surprise but with a sense of complete and utter frustration that on 30 May 1960 the Region was instructed to shut down the project forthwith. The United Kingdom Government had courageously decided that the Bluestreak missile was an unsatisfactory venture and no further expenditure should be incurred.

In the space of 6 weeks the Department of Works presence in Talgarno was no more. Contracts were suspended, materials were taken into store, buildings and equipment made weatherproof and/or mothballed and the deserted townsite of completed and nearly completed buildings handed over to a 3-man caretaking team from WRE. After a site presence of only just 15 months, £1.2M had been expended and the back of the project broken.

No story of Talgarno could be told without mention of those who made it all happen. The engineering design was carried out by Senior Mechanical Engineer, R.H. Thomas, Senior Aerodromes Engineer, D.T. Skewes, Senior Electrical Engineer, W.M. Telford under the general direction of Principal Engineer, J.H. Utting.

The architectural design was carried out by Mr Jack Ballenger at his most ebullient and irascible best under the direction of Principal Architect S.A. Bedford.

Messrs. R.C. McIntyre, J.P. Evans and A.M. Margaria found themselves more than fully occupied with the administrative problems associated with emergent contracts, stores, transport security and of course the camp operation.

The unrewarded and unsung heroes of the project were the Site Team so ably lead by Jack Van Holland. To a man they were recruited for the duration of the project so that on completion of the site works they were disbanded, in a few cases to return to previously held positions, but for the most part discharged to seek work on the labour market.

Today, Talgarno is little more than a memory, a disused airstrip and scoured roads. Its buildings have long been dismantled and re-erected at other locations in the North West ranging from Exmouth to Derby.

GEOFF CULLEN

#### 14.1 DEPARTMENT OF ADMINISTRATIVE SERVICES

The Department of Administrative Services has had many changes to both its name and its responsibilities over the years.

Its present name is of recent vintage. Prior to 1974 it was known as the Department of Services and Property; a name which it had held for only a short time after it had relinquished its most well known title, the Department of the Interior, which it had held from the early 1920's. During the first Great War and earlier, it had been known as the Department of Home Affairs.

The change in title to Department of Administrative Services in 1974 brought the added responsibilities of Foreign Affairs, Media, Police and Customs, Postmaster-General's and Special Minister of State Departments; some of its other responsibilities were shed to other departments.

Between 1932 and 1938, the Department of Interior included a Works and Services Branch, which it had inherited from the defunct Department of Works and Railways.

Currently, the Department of Administrative Services is responsible for a wide range of activities including the provision of various services to government, the public and the public service; these services are dispensed through size divisions, of which the Property and Survey Division is responsible for the acquisition and control of land and property, together with the planning and provision of accommodation for Commonwealth Government purposes.

In Western Australia, the Department of Administrative Services has control of multi-storeyed Government Offices occupied by the Taxation, Repatriation and Customs Departments; it also has smaller Government Offices in Mount Hawthorn, Fremantle, Kalgoorlie, Albany and Bunbury. It also controls the new Commonwealth Archives Building in Victoria Park and thirty houses at Newburn.

The Transport and Storage Division of the Department of Administrative Services has control over the Transport Garage in Wellington Street, premises in Murray Street, Perth and its Stores buildings at Karrakatta.

The following sections illustrate some of our construction activities for the Department of Administrative Services.

#### Kalgoorlie Government Offices

Until April 1975 the offices of the Department of Labour and National Service and of the Australian Broadcasting Commission were accommodated in two adjacent wartime timber framed huts on Lot 58 at the corner of Porter and Brookman Streets in Kalgoorlie. It is believed that the huts originally came from the Boulder Airfield.

Due to the uneconomical maintenance costs on these huts, the Department of Services and Property (now Administrative Services) in 1973 arranged to purchase the adjacent Lot 57 and requested the Department of Housing and Construction to design a new single storey modern office building, suitable for Government Offices in the Kalgoorlie climate and region, on the double block.

Documentation was prepared by the Department of Housing and Construction during 1974 for a coloured concrete block building of reinforced concrete framed construction, having a concrete upper deck, for future second storey additions, and ribbed metal roofing. The copper coloured ribbed metal fascia canopies are a significant feature of the design which is regarded as having considerable architectural merit.

The colonnades on both street frontages provide very necessary shade for the public, and are attractively paved with brick below their pine-board ceilings.



Internally, the separation between Departmental offices is by demountable partitioning, which permits speedy and economical adjustments to be made in accommodation requirements. The building is fully air-conditioned and was erected during 1975/76 by Universal Constructions Pty. Ltd., was occupied in May 1976 and officially opened by J.F. Cotter, M.P. on 10 June 1976.

The cost at completion was \$852,000. Australian Government Departments currently occupying the new building are:-

- Australia Post
- Australian Electoral Office
- Australian Broadcasting Commission
- Aboriginal Affairs Planning Authority
- Department of Labour
- Department of Social Security
- Department of Services and Property
- Parliamentary Office of the local M.P.

#### Government Offices : Albany and Bunbury

Early in the 1960's it became necessary to give consideration to improving the office accommodation for Australia Government Departments in both Albany and Bunbury.

#### Bunbury

In October 1960, Portion of Bunbury Town Lot 189 being Lot 1 on Diagram 7885 with ROW as described on Certificate of Title Volume 1000 Folio 53 was under option to purchase by the Department of Interior from the Bank of New South Wales.

The Lot was a small one, being only twenty-one and two-tenths perches, but it was centrally located on the corner of Victoria and Wellington Streets and had a two storey building of early vintage, having a classical facade to Victoria Street.

The building was acquired with vacant possession in November 1962 and the Department of Works carried out the necessary alterations and additions at a cost of £4,607 in 1963.

Since that time, proposals have been made to demolish the old building and to develop the site to provide more economical and modern accommodation for the existing occupants, together with accommodation for the Postmaster-General's Department and the Australian Broadcasting Commission.

### Albany

In December 1963, accommodation for several Australian Government Departments in Albany had become severely cramped. New premises for the Departments of Labour & National Service, Taxation, Postmaster-General and the Australian Broadcasting Commission were proposed to be built on a narrow strip of land adjacent to the new Albany Post Office.

For specific reasons, it became necessary to plan a staged development of the site; the economics of staged development were debated at length and opinions varied on the most satisfactory way of resolving the problems. Several schemes were mooted, considered and stockpiled until December 1965 when the documentation for the first stage of the development was prepared by consultant architects, Howard Bonner & Associates, and built during 1967 and 1968 by the Albany builders, McBride and Westerberg at a cost of \$68,000. The new building was completed in July and was occupied in September 1968.

### Stores and Transport Depot - Karrakatta

The Stores and Transport Depot at Karrakatta comprises approximately fifteen separate buildings and is situated on an extensive site bounded by Asquith Street, Stubbs Terrace and Alfred Road.

The Depot was established during the latter years of the 1939-45 World War. The main buildings are wartime vintage 'Bellman' hangars; each being 34 metres (112 feet) long and 30 metres (98 feet) wide.

Extensive additions were made in 1962 by Reddell and Tarik Pty. Ltd. at a cost of £65,185 and again in 1968-69 by L.A. and M.J. Don at a cost of \$206,655.

Prior to the construction of the three 700 square metres (40,000 square feet) of new storage space in 1968, the Department of Supply were leasing a huge Wool Store at South Fremantle. Due to the expiration of its lease and the remoteness of its location, it became imperative to extend the Karrakatta Depot buildings.

Drainage problems due to the low-lying location and a sewer main bisecting the site added to the design problems. It became necessary for the Nedlands City Council to resite the stormwater sumps.

In the 1950's, portions of the site were alienated; an Archives Store was built on the corner of Stubbs Terrace and Alfred Road and Departmental Residences were erected in Stubbs Terrace.

During the early 1960's some effort was made to save expense by reusing redundant 'Bellman' type hangars from both Northam and South Australia; however, after protracted investigations it was finally decided that the savings to be made were insignificant and that there was also doubt about the main frames complying with the latest Structural Codes. The proposals were abandoned in favour of the use of new building materials.

#### Department of Stores and Transport

##### Light Transport Garage - Wellington Street

The light transport requirements of most Commonwealth Departments are catered for by the Stores and Transport Division of the Department of Administrative Services. Its vehicles are presently garaged in the Light Transport Depot now situated at Nos. 113-125 Wellington Street, Perth. These premises were built during 1966-67 and comprise the State Controller's Offices, together with a very fine Garage which

provides the garaging and servicing for 170 vehicles; it has frontages to both Bishop's Row and to Wellington Street.

Prior to June 1967, the Light Transport Branch was situated at No. 50 Murray Street, Perth. The Murray Street premises were acquired by the Department of Supply in 1953, and provision was made in 1954 for the garaging of 42 vehicles. The rapid annual increase of numbers in the Light Fleet rendered the Murray Street premises inadequate for its purpose by 1964. Arrangements were then made to purchase Lots 23, 24, 25 and 26 in Wellington Street.

Design documentation was carried out in 1965/66 and the new buildings were constructed during 1966/67 by Universal Constructions Pty. Ltd. at a cost of \$290,000. At the same time, on the adjacent Lot 22, similarly styled offices were built for the Bureau of Meteorology.

A wireless mast at the East end of the site is used for radio-communication between office and vehicles.

BILL PURICH

14.2 THE COMMONWEALTH CENTRE -  
1 ST. GEORGE'S TERRACE, PERTH

In March 1961, because of the inadequacy of the accommodation for its 700 employees in the Taxation Department building situated at the corner of Barrack Street and Murray Street, Perth, it was proposed to acquire another site on which to erect a larger building which would provide sufficient accommodation during the next 10 to 20 years, and which would also allow for expansion thereafter.

An early assessment of requirements indicated that a building having 7432 square metres gross would suffice and that it could be built for an estimated \$1,200,000. This assessment was later amended to accommodate a staff of approximately 800 persons in 15,330 square metres gross at a revised estimate of \$2,300,000; such building would comprise a basement and ten floors each having a gross area of 1394 square metres.

It was suggested that the Department of Works could also be accommodated on three or four of the floors in such a building.

The Y.W.C.A. property on the Northern side of St. George's Terrace was the new site selected; it comprised an area of 3366 square metres and had an 'L' shaped configuration with a narrow access lane to Hay Street. In December 1961, investigations for foundations indicated that no serious difficulties would be encountered on that site.

Acquisition of the Y.W.C.A. site by the Department of Interior was completed on 20 February 1962 and a diagram showing the maximum possible site development was prepared by the Department of Works.

After a visit from the Head Office Co-ordination Committee of that Department in December 1962 and several schematic designs for a new building, it became apparent that unless an

adjacent property was also acquired it would have been an expensive exercise to have developed that particular site as it then existed.

In December 1963, the Christian Brothers College, built in 1896 on Lot 819, on the south side of St. George's Terrace was suggested as an alternative site; it had a frontage of 67 metres to both St. George's Terrace on its Northern boundary, and to Terrace Road on its Southern Boundary and a depth of 131 metres along Victoria Avenue on its Eastern boundary. It had an area of 8773 square metres (2.16 acres) and was valued at between \$240,000 and \$300,000.

Plot ratio calculations indicated that two or more major buildings could provide 4210 square metres of nett office space if the site was fully developed. In April 1964 the Director General of the Department of Works recommended the acquisition of this alternative site.

By July 1964 the Christian Brothers College site had been surveyed, and in August 1964, a new building estimated to cost \$4,800,000 was included in the Design List 'C' of the Department of Works building program.

The Christian Brothers College property had previously been acquired by the Perth City Council for the road widening of Victoria Avenue. The adjacent property contained the concrete footings of the unbuilt Chevron Hilton Hotel which had been commenced to cater for visitors to the Commonwealth Games held at Perth in October and November 1962. That site was, in 1964, owned by the State Government of Western Australia.

Town Planning Board requirements for the super block between Barrack Street and Victoria Avenue on the south side of St. George's Terrace required that the setback of any new buildings along the south side of St. George's Terrace should

be aligned with the street facade of Council House. The reason for this requirement appears to be the possible future widening of St. George's Terrace on its southern side to accommodate service road.

In September 1964 the nett office space requirement of the Taxation Department was established at 9355 square metres, and that of the Bureau of Census and Statistics was estimated to be 558 square metres; thus a gross area of approximately 12,410 square metres was required.

It was then proposed to design in stages for three separate buildings, the first of which was to have a nett office space of 14,965 square metres, whilst buildings 2 and 3 were to have 14,870 and 12,270 square metres of nett office space respectively. Targets were set for tenders to be called in August 1966 for stage one, which was to be completed by March 1969. The new estimate was \$5,260,000.

A successful approach was made to the State Government for an additional 4 metres strip of land along the Western boundary, as the future road widening of Victoria Avenue had not then been resolved by the Perth City Council who were under pressure from the Tree Society to retain the avenue of splendid plane trees.

Amongst the uncertainties of modifications to street alignments, the one design criterion that remained unchallenged was that the building design must be complementary to Council House. The origin of this Town Planning requirement is obscure.

At Head Office of the Department of Works, Mr Wisken was appointed the design architect for the proposed new building. He visited Perth in December 1964 to co-ordinate the tenant department requirements and to establish effective liaison between all departments concerned. At this time the advantages of the new site at last became obvious to the Taxation

Department, and they ceased their demands for the retention of the Y.W.C.A. site on the other side of St. George's Terrace. By January 1965, revised space requirements and planning schedules had been received from both the Bureau of Census and the Taxation Department. The Taxation Department, which then included certain State Taxation facilities, forecast their anticipated growth to be 877 in 1968, 1177 in 1978 and 1581 in 1988.

During February 1965, the Perth City Council prepared plans for the road widening to Victoria Avenue, it included truncations at the North East and North West corners of the site together with road widening proposals for both St. George's Terrace and Terrace Road. Both truncations were opposed by the Department of Works.

In April 1965, the Director of Works, Mr R.A. Ledger retired and Mr F.W. Statham was appointed to the position. At that time Miss C. Teague and Mr Osborne of Head Office inspected the old CBC building and its 1952 Science Building with a view to possible temporary use. It was decided to demolish both buildings.

Between April and June 1965, advanced sketch plans of the new Taxation Office Building were sent from Head Office to Perth for submission to the Perth City Council and the Town Planning Department. The revised estimate had increased to \$5,504,400. Perspective drawings were prepared by the Perth office of the Department of Works; a pile foundation layout was also prepared and documentation for presentation to the Parliamentary Works Committee was nearing completion by July 1965.

It was estimated that 465 piles would be necessary under the tower section of the building and another 80 piles under the low-rise section. An August 1965 review of the foundation requirements by private foundation consultants led to a recommendation that a concrete raft footing be used in lieu



of piles; the savings were claimed to be in the order of \$185,000.

Evidence to the Parliamentary Standing Committee on Public Works was presented in October 1965 by ten witnesses including: the Secretary of the Clerical Offices Association whose members would occupy the building; the President of the Royal Australian Institute of Architects, Western Australian Chapter; the Chief Property Officer of the Department of Interior, the landlord Department; the Town Planning Commissioner for Western Australia; the Two Clerk of the City of Perth; the First Assistant Commissioner in the Taxation Branch of the Department of Treasury; the Acting Assistant Statistician of the Bureau of Census and Statistics in the Department of Treasury and three Assistant Director's General from the Department of Works. The Parliamentary Standing Committee on Public Works was chaired by Mr Wilfred John Brimblecombe M.P., and sat in October 1965. Their recommendations dated 7 December 1965 included: that the construction of the proposed building proceed; provision be made for a larger number of car parking spaces; that the truncations at the North-West and North-East corners of the site should be renegotiated with the Perth City Council. When the news broke in the press, complaints were made that the cost per unit area was too dear compared to private office buildings. The complaints were aired in Parliament, but were dismissed as unfounded on the facts related to elemental costs and an investigation of the background and experience of the authors of those complaints.

The objections to the truncation of the North-West corner of the site by Perth City Council were based on aesthetic grounds. The matter was resolved by lowering the forecourt in front of the Tower block to 1.2 metres above the adjacent footpath level. This was achieved by reducing the ceiling heights of the two basement floors by 150 mm each. The truncation could thus be eliminated.

Mr E. Cartwright was appointed Project Architect in the Western Australian Regional Office. His visit to Head Office in March 1966 to assist in the preparation of the architectural brief signified the commencement of the preparation of the building documentation. In May 1966 it was decided that the Commonwealth Experimental Building Station would fully test the prototype precast facing elements for the proposed new building.

Treasury authorisation for an expenditure of \$5,960,000 was approved in May 1966. Messrs Wisken and Engineer Bubb of Head Office visited Perth to co-ordinate documentation and negotiations with local authorities. Critical Path Chart methods were to be adopted for the Project Documentation. A team of 13 professionals and draftsmen would require 72 weeks i.e. 936 man weeks to produce the necessary documents. The 4 metre strip of land on the Western Boundary was purchased from the State Government; an assessment of \$10,000 was made for the removal of that portion of the Chevron Hilton Hotel footings which encroached onto the amalgamated site.

Due to inflationary trends and a spate of high-rise building activity in the private sector, a cost check was made against Oakleigh House on the North side of St. George's Terrace in July 1966. The re-estimate for the proposed new building became \$6,339,300. Cafeteria planning was arranged with the Department of Labour and National Service.

Difficulties were being experienced in the preparation of the brief for the new computer facilities, but in September 1966 approval was received from the Town Planning Department for the elimination of the truncation at the North-West corner of the site, and funds became available for both the testing of prototype facing panels and for the demolition of that portion of the Chevron Hilton footings within the 4 metre amalgamated strip of land on the Western boundary.

An elemental cost analysis in October 1966 indicated a figure of \$6,686,700 or \$212.5 per square metre for 31,468 square metres gross.

By December 1966 the design of the concrete raft footing was the only outstanding Structural Design item that had still to be completed.

Documentation proceeded rapidly in the early months of 1967. Calculations in March 1967 indicated that a possible dewatering rate of 682,000 litres per hour requiring approximately 600 spears would be necessary. Rain penetration tests were carried out by the Commonwealth Experimental Building Station on the jointing between concrete panels. Because of a sharp increase in building costs between October 1966 and April 1967, a Limit of Cost estimate of \$7,000,000 was expected, plus another \$200,000 for partitioning. However, the Limit of Cost estimate became only \$6,600,000 (a 16% increase on the estimate at the time of review by the Public Works Committee).

The anticipated closing date for tenders was September 1967, but in June 1967 Mr D. Skewes, Project Engineer, was called to Head Office in regard to the design of the concrete raft footing, whilst Architects Cartwright and John visited the Commonwealth Experimental Building Station in Sydney for discussions on the joints between facing panels and the galvanising of panel reinforcement.

Civil engineering work to the site was estimated at \$121,500 in July 1967 and it was decided to call tenders on 26 August 1967. Tenders were to close on 7 November 1967. The requisition for expenditure was set at \$6,600,000 with a reservation of \$225,000 for contingencies and provisional items.

During the tender period, in October 1967, it was learnt that the adjacent sites would be used by the Perth City Council as

the site for a Concert Hall and that the State Government would not allow excavated soil from the Commonwealth site to be spread on the adjacent site as previously agreed.

At this stage it may be useful to record a few relevant facts about the site and its proposed building.

The area of the amalgamated site was 9043 square metres, which under the Plot-ratio contained in the extent Uniform Building Bylaws permitted 45,220 square metres of nett building area, of which 15,736 square metres of nett building area were to be contained within 27,188 square metres of gross building area. The Tower Block occupied 19,306 square metres of the 27,188 square metres of gross building area. The future buildings 2 and 3 would be permitted 29,484 square metres of nett building area and, if built with the same 'nett to gross' area as the subject building, would provide 50,918 square metres of gross additional buildings. The car parking regulation required spaces for 90 parked cars.

Dillingham Construction Pty. Ltd. submitted the lowest tender of \$5,974,800. The funds reservation was set at \$100,000 for contingencies, and a reduced construction period from 135 weeks to 108 weeks was negotiated; the air-conditioning sub-contract being critical in the reduced construction time. Dillingham's tender was accepted on 21 December 1967, and a commencement date was established for 8 January 1968.

Mr R.M. Kilpin was appointed the Construction Project Architect. Construction Manpower resources were estimated to require 16980 man-weeks.

The first building problem was the unavailability of 35 mm deformed bar in February 1968. Later that month Mr K.B. Gosbell and two assistants visited Perth from Head Office to install the 'Kyowa' Soil Pressure Metering devices in the foundations. Later three strain gauges were placed in the columns together

with a dummy gauge for calibration purposes. The switch-box for the soil pressure meter readings is located in the North-West corner of the first Basement level, and adjacent to the Parking Area's external doors. The strain gauges are read in conjunction with a Huggenburger strain bridge.

The concrete raft footing was poured on 30 March 1968 with a continuous 21 hour long operation using 2,800 cubic metres of factory mixed concrete matrix. The total weight of the concrete raft is approximately 6000 tonnes spread 1.677 metres thick over 58 metres x 26.5 metres, and is capable of supporting in excess of 50,000 tonnes. The peak pouring rate was 153 cubic metres per hour.

Because of the satisfactory tender the authorisation amount for expenditure was reduced by \$500,000 to \$6,100,000.

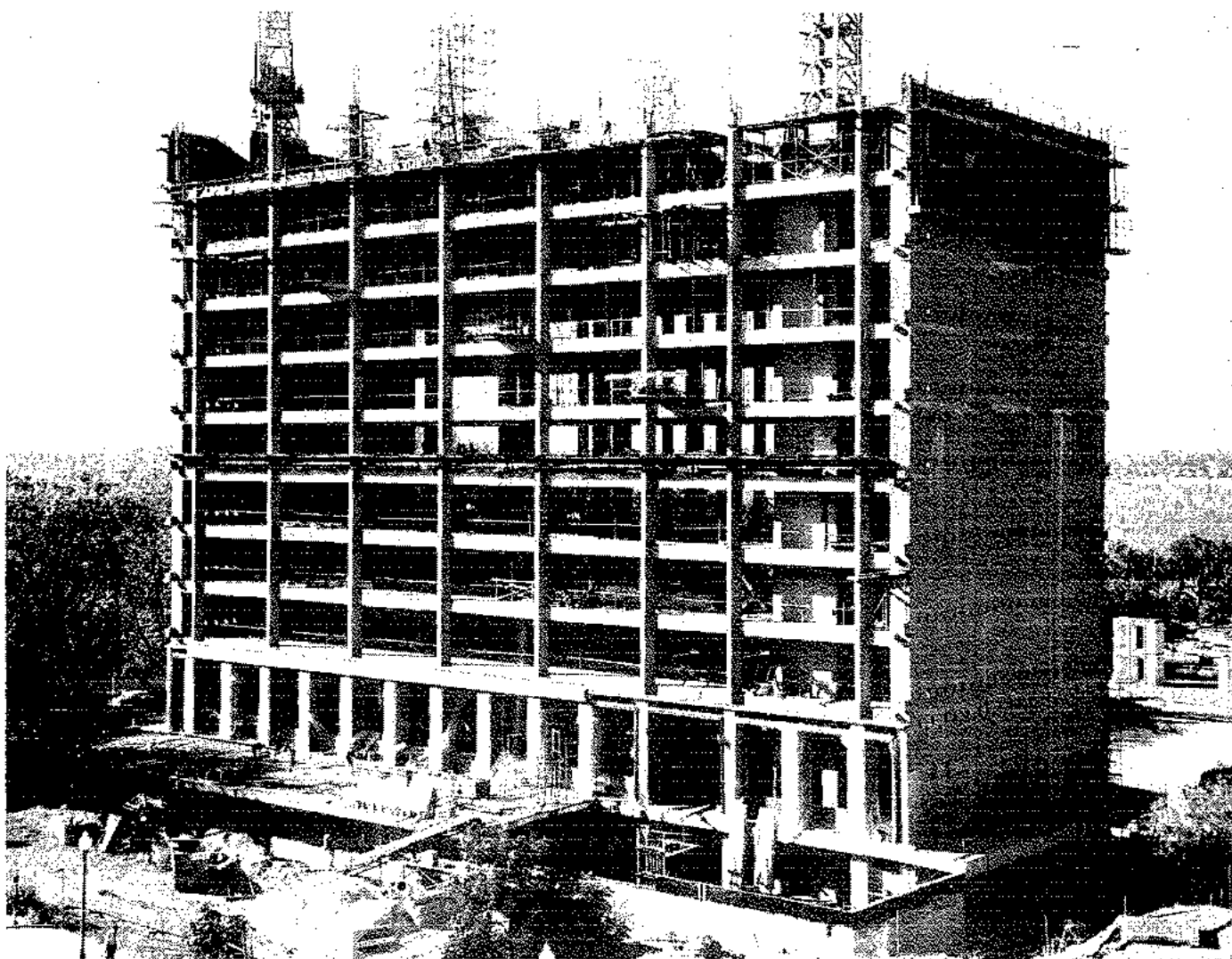
Design conflict between the air-conditioning and partitioning requirements was resolved after a visit to Perth by Mr F. Wickham the Chief Mechanical Engineer in March 1968.

Progress during the first half of 1968 was slow, particularly on the laying of the waterproof membrane, a special fibre-glass reinforced bitumen product. In July the Taxation Department requested a 6 metre x 3 metre strongroom at first Basement Level.

Meetings and design checks continued between the Department of Labour and National Service and Department of Works in regard to the Cafeteria and Food Services.

The Contractor requested reduced formwork stripping times to maintain scheduled progress. These were not granted.

The switch-box for the soil pressure meters was damaged by inclement weather and replaced in August 1968. The State



COMMONWEALTH CENTRE ST GEORGE'S TERRACE  
CONSTRUCTION AT 28 FEBRUARY 1969  
NOTE THE PRECAST WINDOW PANELS UNDER TEST  
AT THE RIGHT HAND EDGE OF THE PHOTOGRAPH

Taxation Department detached itself from Commonwealth Taxation in September 1968. Plan printing and photo-copying accommodation was therefore no longer required. On the long weekend in October 1968 the concrete raft footings and the basement floors were subjected to the Meckering earthquake with no adverse affects.

In November 1968 a layout of the computer floor was finally received from Taxation, and additional Cafeteria area was required for Commonwealth staff employed in nearby buildings. These accommodation problems were resolved by the Inter-departmental Committee of Accommodation which met in Perth in February 1969. \$32,000 was authorised for changes to the Computer Room and in March 1969 the name of the new building was designated 'The Commonwealth Centre'.

From March 1969 until March 1970 the building works maintained a relatively problem-free steady progress. A request was made in December 1969 for a plaque referring to the previous site occupancy to be placed inconspicuously in the front of the new building. It will be found on the right hand side column at the main entrance; it depicts a sketch of the old CBC building and the dates 1896 to 1965.

In April 1970 as the new building was nearing completion, nominations of V.I.P.'s to attend the opening ceremony were drawn up. Co-operation between the private firm of architects for the adjacent Concert Hall and the Department of Works continued in regard to development on the mutual boundary. A bridge linking the two buildings was proposed and abandoned as it would have interfered with the floodlighting of both buildings.

Occupancy timing and fire prevention data were drawn up in May 1969 for the staff that would occupy the new building. Occupation was delayed until July 1970. Perth City Council carried out road widening and footpath work, but levels

differed from those for which the building had been designed. Modifications were then made by Perth City Council and traffic lights were installed at the intersection of Victoria Avenue with St. George's Terrace by the Road Traffic Authority.

Occupation of the building occurred on 4, 11 and 18 of July 1970 and the building was officially opened by the Governor General of Australia Sir Paul Hasluck, G.C.M.G., G.C.V.O., K.St.J. on Wednesday, 29 July 1970. Sir Paul was non-committal about the appearance of the new building as he could not clearly foresee what the outcome of the city would be from the transitional period of building which had occurred in the Sixties and was continuing to occur in the Seventies. As he said, the beauty of a city-like the beauty of a woman - is in the total effect rather than in the separate features and he would suspend judgement until the reconstruction of Perth had been completed.

The Lord Mayor, Sir Thomas Wardle, however congratulated the Commonwealth Government on the new building which was a notable addition to the architecture of modern Perth and was a significant element in the Civic Precinct stretching from Stirling Gardens to Victoria Avenue.

In February 1972 the podium on the South side of the Tower Block was adorned with a work of art by Sculptor Bruno Guigliarelli.

The seventeen storey tower block, rises out of a two storey podium. Thirteen of the floors are occupied with offices. Typical floors are flat-slab concrete supported on square internal columns, load-bearing service-core walls and perimeter beams. The tower block cladding comprises two basic types of precast panel; a flat panel is used to face the Eastern and Western shear walls and a bath type panel is used to frame the aluminium windows on the North and South facades



The panels were fabricated with white cement and a quartz exposed aggregate. The building rises 78 metres from its podium and sinks 12 metres below footpath level in St. George's Terrace. The lowest floor is 1 metre below the level of the Swan River, and 4 metres below normal winter water-table.

Air-conditioning plant is located on the 14th and 15th floors. The building has six passenger lifts, one goods lift and four document transfer lifts.

The Dining Room is designed to seat 300 persons and the Cafeteria is capable of serving meals at between 130 and 170 per hour.

The Main Tenants are the Taxation Department and the Bureau of Census and Statistics both branches of the Treasury Department. The building will accommodate a staff of 1580 persons.

BILL PURICH

## 15. THE ROLE OF DEPARTMENT OF CONSTRUCTION ON COCOS ISLANDS

Cocos (Keeling) Islands are a group of small islands forming an atoll situated some 1750 miles North/North West of Perth at latitude 12'05 South, practically the same latitude South as Darwin.

The Islands have been occupied and owned by the Clunies-Ross Family since 1827, with their 150th Anniversary celebrated just two full years ahead of Western Australia. Around 1860 the then controlling member of the Clunies-Ross Family gained 'protectorship' from H.R.H. Queen Victoria.

Political control and protection of the Islands stayed with the British Government up to 1947, although direct Administration of the British Laws and Ordinances were executed by the Foreign Office of Singapore.

In 1947 the British Government transferred all political and defence controls of the Islands to the Australian Federal Government and they became a Territory of Australia.

During World War I the Islands achieved some degree of fame, having been the zone of the running naval fight between H.M.A.S. Sydney and the infamous German Raider 'Emden'. Emden was finally subdued and grounded on the most northerly of the atoll group, known as North Keeling, some 26 miles north of the main group.

One of the Islands of the group, Direction Island, was the site of British Cable Station, established about 1902 as a repeater station on the main communication sea cable between England and Cottesloe, West Australia, via the Cape of Good Hope of South Africa. This cable and station continued to operate until 1968, with the operation, manning and responsibility for the station being transferred to the

Australian O.T.C. in 1960. The station closed in 1968 when the new Queen Elizabeth cable was opened via another route.

The growth of the Australian passenger aircraft activities resulted with Qantas opening the first regular air service between Australia and South Africa, and thereby the necessity to establish a high grade flight strip at Cocos. The Australian Government negotiated with the owner of the Islands, John Clunies-Ross around 1950, and purchased outright that section of West Island where establishment of the flight strip proceeded.

The development of the aerodrome needed the full back up services of Department of Civil Aviation for radio and navigation, Qantas ground staff for all messing facilities, Meteorology for weather information, Shell Oil Company for fuel handling and again Department of Civil Aviation for marine handling, air/sea rescue facilities, and flight service operation.

The entire establishment was designed and set up with all construction being handled by No. 2 A.C.S. R.A.A.F. D.C.A. technical staff arranged and installed power generation plants, radio, navigational aids, ship handling equipment etc.

Shell Oil Company established their own fuel handling staff and facilities and until they rebuilt in 1961 to provide bulk handling and underwater fuel line out into the anchorage in the Lagoon, all fuel was brought ashore by barges in 44 gallon drums. This was very tedious and back breaking work for all people involved and when one saw 5,000 gallons of fuel going into a Super Constellation fuel tanks one was inclined to say 'Hope we never see another aircraft'.

The facilities for handling civil passenger air services were finally completed in 1953 and Qantas began their bi-weekly service to Johannesburg, South Africa.

The Department of Works involvement up to this time had been a minor contribution by the Buildings Research Station in reporting to the Department of Civil Aviation on suitability of prefabricated construction methods used by the A.C.S.

The Western Australian Office of Department of Works first became involved when the Federal Government decided to set up an Administration on the Islands under an Official Representative, appointed by the then Minister of External Territories Sir Paul Hasluck. The first appointee was Lt./Com. Jack Hull, seconded from the Royal Australian Navy for the office. Lt./Com. Hull had been in charge of a naval operational at the period of the Monte Bellos Atomic Test explosion. Hull was appointed in 1954. On 25 March 1955, a request for estimates for residences and buildings to house the official representatives and his activities was received.

An estimate of £67,500 was submitted and in September 1956 our first contract for the construction of:-

1. Official Residence
2. Doctors Residence
3. School Building
4. Administration Office

was let to J.B. Hawkins and Son for £67,225.

The officer responsible for the Design of the project was Architect Sam Gilovitz.

Various extras were made to the contract and the final value of the contract was £88,000.

The contractor's problems in arranging his work were beyond belief. Shipping to the Islands was in those days arranged by the then Department of Civil Aviation and their normal

annual loading was somewhere around 250 tons. All of a sudden the contractor wanted 1200 tons of space. After nine months the British East Indies Line ship 'M.V. Chakdina' of 8,000 tons was chartered by the Department of Civil Aviation to lift the contractors and Department of Civil Aviation loading to Cocos. The first barge load got ashore in June 1957. Thereafter the contract went well and was virtually completed on time (8 months), allowing for the extensive shipping delay.

The contract called for, and achieved, that all concrete footings, stumps, beams and floor slabs be precast in Perth, that all framings and trusses be precut and all joinery be red lead primed and undercoated before shipment.

The rules applicable on the Island at this period were that the subsidisation of living costs and personnel effects purchased was only allowable to civil servants. Consequently, the contractors men were charged a flat rate of £2 per head per day, over and above the purchase price of articles bought from the store, to offset the trading loss claimed by Qantas.

Accommodation was not available for contractors staff, so they were all housed in tents, supplied and erected along the foreshore by the contractor. Qantas did permit messing of the non-permanent people, but in the event of an aircraft being on the ground, the contractors men were required to wait for meals till aircraft passengers had been catered for. Perhaps these points are not terribly interesting, but the writer has included them merely to indicate the frustrations of our early association with the Islands.

The Department second major contract on the Island was permitted to be negotiated arrangement with the same firm J.B. Hawkins and Son at the contract price of £159,625.

This contract comprised:-

(A) For Department of External Territories

1. Teachers Residence
2. Old Hospital Cyclone Shelter (later known as V.K.W.)
3. Recreation building

(B) For Department of Civil Aviation

1. Two x 2 bedroom residences
2. Single mens quarters (since demolished)
3. Terminal building/Qantas workshop
4. P.A.X. accommodation buildings (2 off)
5. Compass locator building
6. Additions to Islands shop to house first two freezer/coolrooms

The architect in charge of design of this project was Ken Crockford.

The same type of shipping problem was encountered for this job and about six months passed before the contractor was able to get materials to the Islands. During this period attempts were made through Department of Works to try gaining assistance from Navy and Army for shipping but with negative results.

This second major contract was finally completed late in 1959.

Officers of the Department of Works who visited the Island up to this period, apart from the writer were Ken Crockford, in November 1957 on a design survey for the second contract and E. Gilbert to commission the freezer/coolrooms.

The freezer/coolrooms also involved our Day Labour group for the first time. The cabinets were constructed in a knock down condition and shipped to the Island. Don McLagen was our first day labour employee on the Island, going out with E. Gilbert to erect the coolrooms on 23 May 1959.

During the early stages of design for the second contract our Head Office became involved with a suggestion that the houses being designed could be similar to those then being constructed in Darwin and on 17 March 1958 we received a Head Office memo which said amongst other things, and I quote 'with regard to the Darwin design you will be required to include for such additional bracing and strengthening to walls and roof to render the house cyclone resistant as Darwin is not deemed to be in a cyclone area' unquote.

During early 1959 an inter-departmental decision was made to approach John Clunies-Ross to carry out construction and or maintenance work on the Island with the objects in mind of (a) providing employment for the indigenous population and (b) to reduce the extremely high costs. (In 1958 J.B. Hawkins & Son had given this department comparative costs for buildings at Perth and Cocos e.g. a three bedroom house £9,261 in Perth and £17,836 on Cocos).

Our first officer to visit the Islands and discuss the proposal with John Clunies-Ross was Mr Jim Utting, ex-Principal Engineer who visited during May 1959. Mr Utting's report was encouraging and a further meeting with Mr Clunies-Ross was set up in July 1959 with the writer. At this meeting agreement was reached concerning the extent of work the indigenous people could undertake and how it would proceed.

The Department's development of the use of the local people resulted in no outside contractors or tradesmen being used on the Island for Government Building work from the completion of Hawkins No. 2 contract in 1959 through to 1975.

Overseas Telecommunication brought in Geraldton Building Company to upgrade the Cable Station on Direction Island, when O.T.C. took over the station in 1960. Qantas in 1962 also used Geraldton Building Company to construct two residences for their manager and station manager. These houses have since been acquired by the Commonwealth for staff.

The Department of Works was able to obtain ministerial approval on a yearly basis up to 1972 to negotiate contracts on the Islands with the Clunies-Ross Estate.

The Clunies-Ross Estate, from 1959 to 1974, carried out contract works, both repairs and maintenance and New Works to an approximate value of \$1.73M. For these works they provided all materials and all labour, including arranging their own shipping. Apart from the repair and maintenance work, the Estate constructed the jetty and the two subsequent extensions, new power house, two additions to transmitter building, new hospital and additions, six residences, additions to the Island shop and associated coolrooms, additions to the old club including toilets and library.

All of the above works, including numerous minor works were carried out with minimum supervision, minimum fuss, no complaints from the various clients of any consequence, and always with an extremely high quality of materials and workmanship.

Late in 1973 and early 1974, when Qantas and South African Airways changed to 707 aircraft Cocos was no longer required for civil operations. The Department of Civil Aviation elected to wind down their commitments on the Islands and the Department of Special Minister of State became total owners of all assets. The Department of Civil Aviation remained with Flight Service and Radio maintenance personnel only.



The Directors of Construction and Civil Aviation, Messrs F.W. Statham and W. Boud, met on the Island early 1974 to discuss the future operation and maintenance activities and from this meeting our Director produced a paper developing our future activities.

On 1 December 1974, the Department of Construction took over the full responsibility, as agents for Special Minister of State for all buildings maintenance, flight strip maintenance, vehicle provision and maintenance, loading and unloading of charter aircraft, provisioning of the store, arranging of all barracks equipment, checking of domestic inventories at staff movement, staffing of the administrator's launch, running of power house etc.

Our first resident team on the Island were Ted Prior, Officer-in-Charge, Ron Dolphin Clerk, Chub Skulley and Don Milne Fitters, Bob Keane Refrigeration Mechanic, Trevor Sanford and Tony Maddocks Electricians.

In addition to our own staff a contract was negotiated with the Estate for Municipal services, on a yearly basis at approximately \$70,000 per year. This contract provides for seven men, full time, and calls for such services as rubbish collection and disposal, strip rolling, handling of shipping and aircraft supplies, general island beautification and all other functions of a municipal work force.

Since 1975, due to changes in policy and migration from the Islands, new construction works have been carried out by this Department, but by various means, i.e. outside contractors, local contractors, departmental visiting direct labour with Department of Works being responsible for arranging all materials and shipping.

In 1967, this Department using Day Labour, carried out the sealing of the flight strip and associated aircraft parking

areas. The cost of the project was £170,000. All materials, aggregate, bitumen and plant were shipped in and stockpiled. The onsite Supervisor for the job was Joe Hamilton who claimed he was able to arrange for no rain during the job by burying on the beach two little black balls (aboriginal rain making stones). Joe Hamilton and his team went back to the Islands in 1972 to seal the 'Sydney Highway' (the road from settlement area to the jetty), at a cost of \$53,000. Again all materials and plant were shipped in.

Since early 1976 the general running of the Islands, functions and operations of the Department on the Islands, methods of building and servicing have changed and will, no doubt be written about by others.

ARTHUR BRAUND

## 16. AUSTRALIAN BROADCASTING COMMISSION

### Historical

When George Frederick Stone, Sheriff of the Swan River Colony and later Advocate General, built his Adelaide Terrace home in the 1830's, he could not have foreseen the development around 'Rosehill', the old two storeyed residence which was demolished in 1954 to make way for the Australian Broadcasting Commission's Broadcast and Television Studio complex in Adelaide Terrace, Perth.

It is interesting to trace the history of the ABC Perth back to the origin of station 6WF, when in 1923 West Farmers began transmission from their studios and transmitter on West Farmers building in Wellington Street.

The studio was bought, in 1929, by a private company, the Australian Broadcasting Company, and transferred to the E S & A Bank building at the corner of Hay and Milligan Streets.

Three years later the Australian Broadcasting Commission was constituted and shortly after commencing operation on 1 July 1932, took over the 6WF Studio and the Wanneroo Transmitter.

At this time the Department of Interior, Works and Services Branch made its grand entry into the field of broadcasting and by 14 November 1932 had let a £1,600 contract for erection of a Caretakers Cottage at the Wanneroo Transmitter Station.

In 1937 broadcasting operations were transferred from Milligan Street to Broadcast House which was originally built in 1915 at the rear of the present Council House site, for the Soldiers Welcome Committee and Red Cross. For the next 23 years the Commission staff laboured in accommodation that

a Parliamentary Standing Committee was to finally describe as deplorable and overcrowded; staff in some cases being housed in converted storerooms or passage ways, musicians complained of bad lighting while toilets were inadequate and unhealthy. Leaking roofs and other building maintenance kept the Department's Day Labour team busy for many years.

The Rosehill site was acquired by the Australian Broadcasting Commission in 1943 and in 1945 a contract was left for the initial stages of new broadcasting studios. However, four months later, due to public protests that the limited post war supplies of building materials and labour were being used for studios rather than housing, the contract was cancelled by the then Prime Minister.

#### Adelaide Terrace Broadcast Studios

It was not until March 1957 that, under pressure from the Australian Broadcasting Commission and its regional manager, Basil Kirke, a Parliamentary Standing Committee on public works recommended that urgent priority be given to plans for new broadcast studios.

The previous year the Australian Broadcasting Commission had submitted a brief of their accommodation requirements to the Department of Works and staff from the Western Australian region were transferred to Central Office to assist in development of sketch plans and preparation of a Parliamentary Submission.

Following Parliamentary approval of the proposal, project staff were again transferred, this time to the Central Office's Banks and Special Projects Branch in Sydney, to assist with preparation of contract documents.

A tender of £648,755 from Sloan Construction Company for construction of the studios was accepted by the Department of Works in August 1958.

### The Broadcast Building

The L-shaped plan illustration, which when completed housed the most up-to-date broadcasting facilities in Australia, comprises two clearly defined elements -

- (a) The five storey Administrative Wing was the first concrete flat plate building erected in Perth.  
The 200 mm thick concrete plate sprayed on the underside with vermiculite acoustic plaster eliminated false ceilings and proved to be a very economical method of construction.
- (b) The Production Block of nine studios, studio control rooms, recording rooms, record and tape libraries, and other accommodation directly concerned with Studio Production, and at the rear lower level a structurally isolated two storey mechanical services block. The Basil Kirke Studio measuring 24 m x 18 m x 9 m high will accommodate a full concert orchestra with 80 musicians together with a choir of 100 persons.  
Small audiences are sometimes accommodated. The smaller studios have been sound isolated and acoustically designed to accommodate small orchestras, variety productions and drama broadcasts.

### The Television Building

At the time the new Broadcast facilities were being designed, Perth was also preparing for the scheduled introduction of national television by 1960.

Again staff from the Perth branch of the Department of Works were transferred to Sydney to assist with preparation of contract documents for new Television Studios to be erected on the lower portion of the Australian Broadcasting Commission site facing Terrace Road and Swan River. Perth was the first capital city to have its sound broadcasting and television services integrated on the one site.

The centre of the TV Studios is the 15 m x 9 m x 9 m high Production Studio with scenery workshop, storage area, make up, dressing and assembly rooms grouped around it.

Overlooking the studios is the sound and vision control room linking with the master control, or electronic nerve centre, of the building. The building also accommodates offices, staff facilities, air conditioning plant and a large garage housing outside broadcast vans.

A 75 m high steel framed tower on the roof beams signals to a transmitter building at Bickley.

#### Additions to the Broadcast TV Buildings

On several occasions, since completion of the Australian Broadcasting Commission Studio Buildings, the Department of Works has been commissioned to design and supervise the construction of major alterations and additions to the Studio Complex. This work comprises:-

1. Artist Rehearsal and Change Rooms
2. TV Tape and Film Library
3. Three Storey West Wing including OB Garage
4. Five Storey News and Film Complex which centred the New Department and formed a physical link between the Broadcast and TV Buildings
5. New Garage for Outside Broadcast Vans

#### Transmitter Buildings

Coinciding with the construction of the new TV studio, the Department of Works designed and supervised, for the Post Master General's Department, the construction of a large TV Transmitter Building on an elevated site at Bickley in the Darling Ranges.

One year later the Department also designed and supervised the construction of the £60,000 6WF/6WN and overseas Broadcast Transmitter Building at Wanneroo. Features of this building are the 38 m long, 6 m wide transmitter room with its semi-circular control room window giving operators full vision of all transmitters and 2 m deep underground cable tunnel carrying a maze of control transmission and power lines.

Broadcast programs are relayed from the Australian Broadcasting Commission studios to the Transmitter Building by land line.

#### Regional Transmitter and Translator Stations

Other commissions associated with broadcasting which have been undertaken by the Department include buildings, siteworks and road works to many of the Australian Broadcasting Commission's 16 Regional Medium Wave Stations and Telecom's 15 Regional Television Transmitters and 10 Regional Translator Stations.

JOHN HALLAM

## 17. DEPARTMENT OF VETERANS' AFFAIRS

From the original 'Australian Soldiers' Repatriation Act 1917', the 'Repatriation Commission' was formed to advise the Minister of Repatriation; on 8 April 1918, the 'Department of Repatriation and War Pensions' commenced to administer the Act. Its legislation was consolidated in 1920 with the relevant Regulations.

The 'War Pensions' part of its designation was soon dropped and the name of the Department remained unchanged until 1976 when it became the 'Department of Veterans' Affairs'; except for a short period between 1974 and 1975 when it was called the Department of Repatriation and Compensation.

The Department of Veterans' Affairs is responsible for providing compensation and welfare services to veterans and their dependants.

Its first office in Western Australia was in the original A.M.P. Building, which building also housed our office, and the Works Registrar of the Department of Works and Railways. Due to the sudden increase in the demands on the new Repatriation Department, it became necessary to rapidly expand its accommodation to the old Police Court Buildings in Barrack Street, where the Department was administered until its new temporary building along Riverside Drive was built and opened in December 1920. This temporary building was occupied until 1959 when it was demolished and the land on which it stood reverted to an A1 Class Reserve.

The facilities and their buildings presently under the control of this department in Western Australia include the following:-

Repatriation General Hospital, Hollywood  
Edward Millen Hospital, Victoria Park



Repatriation Artificial Limb and Appliance  
Centre, Hollywood  
Lemnos Mental Hospital, Shenton Park  
Branch Office, 11 William Street, Perth  
Out-Patient Department, Hollywood

The buildings and plant at each of these premises were built by and are maintained (except Lemnos) by the Department of Construction. The history of each institution is contained hereafter.

#### 17.1 REPATRIATION GENERAL HOSPITAL, HOLLYWOOD

In the first half of 1947 after the 1939-1945 conflict, as happened previously in 1921 after the 1914-1918 War, the Army Base Hospitals in each State, where they occurred, passed from the control of the Department of Army to the control of the Repatriation Commission.

The new 110(P) Military Hospital at Hollywood, Western Australia, was thus officially handed over by the Department of Army to the Department of Repatriation at 10.00 a.m. on 1 February 1947 by Major-General J. Whitelaw, G.O.C. Western Command.

Prior to that time, Military Hospitals in Western Australia had been located at either Perth or Fremantle. The earliest known Military Hospital was located on the corner of St. George's Terrace and George Street where the First Church of Christ Scientist now stands. It was built in close proximity to the 'Barracks' of which only the controversial 'Archway' now remains at the western end of St. George's Terrace. This early military hospital was demolished in 1938 immediately prior to the construction of that church.

In the years preceding the Great War of 1914-1918, the Government of Western Australia was engaged in the process of executing a rather extensive scheme of immigration under

agreement with the Imperial Government of Great Britain in connection with which there was established an Immigrants' Home at Fremantle, the main port of this State. In 1915 the Defence Department leased this Immigrants' Home and in it established the first Federal Military Hospital in Western Australia, its designation being 'No. 8 Australian General Hospital'.

Because Fremantle was the first port of call for returning Australian troops, a great number of A.I.F. soldiers were admitted for medical treatment before proceeding on to their camps in the Eastern States. By annexation of the adjacent sporting arena and the Jewish Synagogue, new temporary wards were quickly erected. It is known that one thousand patients were under treatment at one time. On 1 April 1921, 'No. 8 Australian General Hospital' was transferred to the control of the Repatriation Department and became the 'Repatriation General Hospital for Western Australia' with an average of 81 patients per month.

By February 1922, the number of patients had dwindled sufficiently for the transfer of patients from Fremantle to the new Repatriation buildings at the Perth Public Hospital including Repatriation Wards, an Out-Patients' Clinic, accommodation for 24 nurses and two residences for medical officers. 'Block C' as it was known represented 50% of the Perth Public Hospital, could accommodate 90 patients. As the number of patients continued to diminish, the Repatriation wards were taken over by the Hospital Board of Management; in 1934 all of the Repatriation buildings were purchased by the State Government from the Commonwealth.

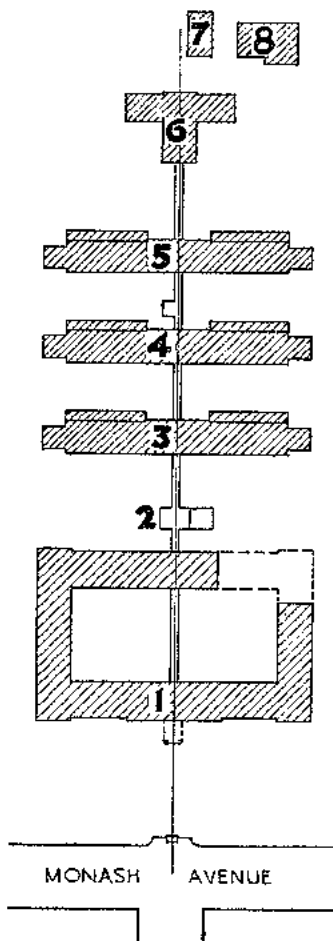
Similarly, the totally and permanently invalided ex-servicemen were cared for at the 'ANZAC Hostel' at Veane's Point, Cottesloe, now occupied by the Freshwater Bay Yacht Club.

The lease of the Class A1 Reserve at Veane's Point was subject to a 10 year agreement between the State of Western Australia and the Department of Repatriation. It commenced in January 1920 and was revoked by the Commonwealth in February 1928 after a valuation had been made of the improvements by the then Commonwealth Works Director, G.S. Cook of the Department of Works and Railways. The buildings were reverted to the State and the remaining patients were transferred on 10 March 1928 to 'Lucknow' hospital which stood on cliffs overlooking the river at Claremont. This hospital is known today as 'Betherda'. In 1934 patients were removed to a newly built 'Lucknow' hospital having a frontage to the Stirling Highway at Claremont. In 1940 the lease of this hospital was transferred from Repatriation to Defence Department control.

With the outbreak of World War II, it became necessary for substantial modern hospital accommodation to be provided. The Repatriation Department's arrangement with the Perth Public Hospital was for the use of up to only 70 beds and an Out-Patient Clinic. This was regarded as totally inadequate under wartime circumstances. The Department of Army through Defence Liaison and the Allied Works Council of the Department of Works, decided to build a 500 bed Military Base Hospital on 25 acres of virgin land at Hollywood, a newly developed suburb approximately 8 kilometres west of Perth, that came within the northern boundaries of the Shire of Nedlands. The land had a frontage of 1,437.4 links to Monash Avenue and 1,435.0 links to Verdun Street and was portion of Swan Location 1715 on Diagram 11678 contained in Certificate of Title Volume 1072, Folio 157.

The decision was made in 1940 to model the design of the proposed new hospital on the 'Pavilion' type building at the Heidelberg Military Hospital in Victoria. Plans were prepared at Central Office between September and December 1940 by Mr R.A. Ledger, who later became Principal Architect of the

Extract from the  
"West Australian"  
11 November 1941



The above diagram shows the layout of the Hollywood Military Hospital. The section marked (1) is the main administrative block, (2) is the visitors' block, (3), (4) and (5) are the ward blocks, (6) is the kitchen, (7) the morgue, and (8) the boiler room. To the right of the main block, in a separate building, not shown on the diagram, is the nurses' and V.A.D.'s quarters; and to the left of the main block is the quarters of the Australian Army Medical Corps.

## HOLLYWOOD HOSPITAL.

PATIENTS MOVE IN SOON.

Cost of Erection, £180,000.

A portion of the Hollywood Military Hospital, it is expected, will be handed over by the Commonwealth Works Department to the military authorities this week, and accommodation will immediately be provided for some of the wounded of this war. For patients, there are at present three ward blocks with a total of 204 beds.

The hospital is set in ample grounds for extensions to be made, and these are regarded as inevitable in the near future. Buildings to house the staff will not, however, need to be increased. There is already accommodation for a staff of 138.

The hospital faces Monash-avenue, Hollywood. It is of pavilion type, but owing to the slope of the ground portions of it have a lower ground floor as well as a ground floor. One other variation from the ground floor level is that there is a first floor above the main entrance; on this floor are the living quarters of the resident medical officers. The principal blocks of buildings are connected by covered ways constructed on a minimum slope.

At the front of the hospital is the main administrative block. This comprises offices, an out-patients' department, dispensary, X-ray unit, dental unit, and physio-therapy section. Towards the rear of this block (north wing) are two operating theatres, with change rooms for doctors and nurses, steriliser rooms, and scrub-up rooms. There is also a three-bed recovery ward. The theatres and the recovery ward are air-conditioned. Living quarters for sergeants of the Australian Army Medical Corps are on the lower ground floor of the right (east) wing.

### Accommodation for Visitors.

Astride the covered way, between the main block and the first ward block, is a visitors' unit. The left portion of this unit consists of two bedrooms with lavatories. The bedrooms have been provided with a view to the possibility of visitors—in the case of critically ill patients—having to remain the night. On the right is a waiting room, a sweets shop, barber's shop, store, cafe and kitchen.

The ward blocks, one, two and three, are directly behind each other. Each block contains two 32-bed

wards, subdivided by clear glass partitions into bays of four beds each. Adjoining each ward is a ward sister's room, with a clear glass panel which allows her a full view of the ward. There is also a two-bed ward. In addition there are steriliser rooms, a linen room, doctor's examination room, lavatories, two bathrooms, and one shower recess. One bathroom has wide doors to permit of wheeled chairs going in. In the centre of

this bathroom is a porcelain bath, enabling patients to be attended to from either side. Completing each ward is a pantry. Although all food is prepared in the kitchen, it is delivered to the ward pantries in electrically-heated food trolleys, and is distributed from the pantries.

Beneath the first ward block (lower ground floor) is the pathology section, with laboratories and cardiography room, steriliser rooms, and store. On the lower ground floor of the second block are the patients' dining rooms and reading rooms, and on the lower ground floor of the third block are the staff dining room, patients' recreation room and the occupational-therapy room.

### An Up-to-date Kitchen.

At the end of the covered way, past the three ward blocks, is the kitchen. (The length of the covered way from the main entrance to the kitchen block is 213 yards.) The kitchen contains a six-oven gas range, a grilling range, a fish fry, steam ovens, steam-jacketed stock pots, and steam-heated pots for tea, coffee, etc. An adjoining room is for the storage and preparation of vegetables. A dry goods store is provided, a refrigerator for meat and fish, and another refrigerator for other foodstuffs.

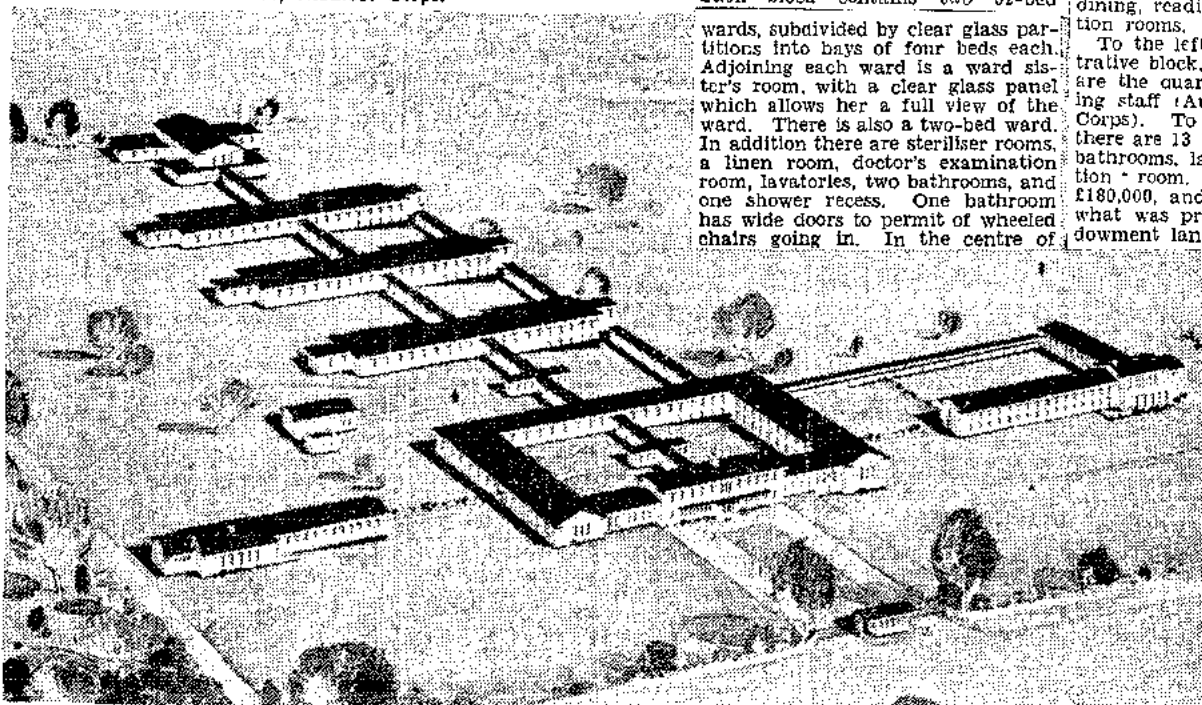
Also, there is a refrigerated garbage room to keep refuse from fermenting and smelling, pending its removal. In addition, on the ground floor there are staff change rooms, a common room, a small-diet kitchen, a washing-up room, and storage space for the food trolleys. On the lower ground floor are storerooms for the whole hospital, a small workshop, and a garage for three vehicles.

Behind the kitchen is a boiler-house where steam is generated to supply the various cookers, sterilisers, autoclaves, etc., also to supply calorifiers under the rear of the main block, where water is heated and reticulated to all parts of the hospital. Near the boiler-house, in a separate building, is the morgue, complete with autopsy table.

### Staff's Living Quarters.

Separated from the main administrative block, to the right, is a two-storey building with living accommodation for the nurses and V.A.D.'s attached to the hospital. There is a small suite of rooms for the matron, and bedrooms for 28 nurses, two senior sisters and one home sister; also, bedrooms for 28 V.A.D.'s and a V.A.D. commandant. There is also a small three-bed sick bay for nurses and V.A.D.'s who may require medical attention. Divided by folding doors from their dining room, the nurses have a lounge room, and have reading rooms opening out on a small balcony. The V.A.D.'s have their own dining, reading, writing and recreation rooms.

To the left of the main administrative block, in a separate building, are the quarters of the male nursing staff (Australian Army Medical Corps). To accommodate 49 men there are 13 bedrooms, together with bathrooms, lavatories, and a recreation room. The hospital cost £180,000, and is set in 25 acres of what was previously University endowment land.



Western Australian Branch Office, and Mr G.F. Glennon who had worked on the Western Australian University buildings with Rodney Alsop, the noted architect who was responsible for the design of the Western Australian University's 'Winthrop Hall'. Advantage was taken of the site contours, so that many of the Wards became partly two storeyed buildings. The calling of tenders was expedited and several building contractors commenced their operations in 1941.

The Main Administration building facing Monash Avenue was built by W.A. Ralph; the Nurses' Quarters by W. Fairweather; the Australian Army Medical Corps Quarters by W. Giltrap; the Boiler House, Mortuary and Wards 1, 2 and 3 by A.T. Brine; Wards 4, 5 and 6 were built by the West Australian Public Works Department. The boilers and hot water services were installed by P.J. Mapstone.

Each contract was for a very short period of time with stiff penalties for late completion. Shortages of copper pipe caused delays to most contracts and a controversial decision was made to combine the fire and domestic water services on one ring-main with a metered by-pass for the domestic service to enable contractors to complete their contracts in reasonable time.

Great difficulty was also experienced by the various contractors in regard to obtaining the services of tradesmen, most of whom had joined the armed forces. Eventually, it became necessary to temporarily release military personnel to cope with the situation; the then Director of Works, H.B. Sturtevant, was instrumental in seeking and obtaining their temporary release. Contractors co-operated with one another in sharing the services of available tradesmen.

The Red Cross buildings at the Northern end of the hospital were designed by a private architect, F.G.B. Hawkins, and built by Sandwell and Wood, who in 1943 also built the temporary

wooden huts which are currently used for staff accommodation.

In October 1943, the erection of a Chapel which was designed for the combined use of the Christian religions, was commenced by R.J. Davies; and in 1945 additional prefabricated huts were erected by Berry Brothers as temporary staff accommodation.

The first casualties to be admitted to the new hospital were from the Battle of the Coral Sea and were mainly Americans. It functioned as a Military Base Hospital until 1946. It was handed over to the Repatriation Department at midnight on 31 January 1947.

The first Ward taken over by Repatriation from Army was on 1 April 1946, and the last Army Wards were transferred to Repatriation on 30 June 1947; a valuation of the entire property was then made for the Repatriation Department by the Taxation Department through the Director of Works and Housing, H.B. Sturtevant. The value at that time was £347,300.

Since the Repatriation Commission assumed control, the hospital has been extended regularly to meet new demands; a 5 Year Program was initiated by the Department of Works and Housing in 1946 and included residences for the Medical Superintendent, Assistant Superintendent and Secretary, Living Quarters for Male Staff and a T.B. Out-Patients' Clinic. A new Cafeteria for hospital staff was opened in 1947, but many projects were unduly delayed due to shortages of materials and labour.

In 1948, another 8 acres of land, to the East of the site, were acquired from the University of Western Australia. Four of these areas were returned to the University in 1953 for the State Chest Hospital, now part of the Queen Elizabeth II Medical Centre.

By 1950, the Pathology areas had been increased; new garages, workshops and coal bunkering facilities had been built.

During 1950, it became necessary for the Department of Works to appoint a Resident Engineer in lieu of a Works Supervisor. J.K. Murray became the first Resident Engineer until his retirement in September 1976. Some of the many economies brought about by Mr Murray were the changing from coal to sawdust fuel and the purchasing instead of hiring trucks to cart that fuel to feed the main boilers. From 1951 to 1953, additionally to an upgrading of the coal bunkering, automatic stokers were installed in the Boiler House; the Main Kitchen was remodelled and its refrigeration was improved; the Laundry facilities were considerably upgraded. New building work included a Refuse Disposal Plant, an X-Ray Film Store and an Electrical Distribution Centre. In 1953, approximately 61 buildings and 732 metres of Covered Way occupied the site.

On 1 April 1954, Repatriation General Hospital Hollywood was honoured with a visit by Her Majesty Queen Elizabeth and His Royal Highness the Duke of Edinburgh. To commemorate this memorable occasion, the Commission presented to every patient and to each member of the staff a memento which took the form of a folder containing an official Court photograph of the Queen and her husband.

Modifications consisting £20,000 were made to the Psychiatric Ward during 1954-55, and in 1958-59 the Nursing Sisters eventually obtained their long awaited new quarters after being accommodated since October 1946 in leased premises situated in Havelock Street, West Perth. A new Operating Theatre block was built during 1964-65, and the first multi-storey addition, the four storey Para-medical Block and Day Centre building, was completed in August 1971 at a cost of \$1,090,000; this new complex altered the character of the pavilion type hospital, but centralised the most modern facilities available in the fields of pathology, radiology and occupational therapy.

Building continued throughout 1974-75 with a new Admission Centre and Medical Library, and in 1975-76 with a new Out-Patients' Department which had previously been located in the new Repatriation Building in Perth. Both the Admission Centre at the Out-Patients' Department retained the 'Pavilion' type character. More recently in 1977-78 a new combined Bulk Store and Orderlies Amenities Building has been built to the south of the Artificial Limb Factory. These recent buildings have also departed from the 'Pavilion' look and have been designed to compliment the Artificial Limb Factory which was built in 1961-62 and is the subject of another section of this book.

There are now 63 buildings, most of brick and tile construction on about 29 acres. Included in these are the Administration Block, Dispensary, Operating Theatres, Pathology and Radiology Departments, 17 Wards, Staff Quarters, Laundry, Bulk Store and Orderlies Amenities Building, and 800 metres of covered ways.

Today, Repatriation General Hospital, Hollywood is a general hospital providing a wide range of diagnostic and treatment facilities for veterans of the armed forces, their dependants and community patients. Also, it is a teaching hospital for the Faculty of Medicine, University of Western Australia, and its accredited as a post-graduate training institution in a number of specialties.

Recently some co-ordinated medical services have been developed with the Queen Elizabeth II Medical Centre, particularly in operative orthopaedics and genito-urinary surgery. Further extensions to this program are under consideration.

## 17.2 EDWARD MILLEN HOSPITAL

Land now occupied by the hospital and ancillary buildings is part of a land grant of over 5,000 acres, which was made in 1842 to an insurance broker named Samuel Bickley, of Middlesex,



England. Over the years it passed through several owners until 1885, when it was subdivided. The hospital site was a 30 acre lot which likewise had numerous owners until 1911, when it was purchased by Elizabeth Baillie.

A two-storey brick and stone building was erected on the highest eminence on the site, and operated as a private Maternity Hospital known as 'The Rotunda Hospital'. As it was the only building in the area apart from a couple of old houses, the patients no doubt considered themselves in the country. A puzzling feature of the Hospital was that the labour ward was on the top floor, gained by a set of massive stairs. Recently discovered is a trapdoor into a small underground cellar below those stairs.

During the outbreak of the Bubonic Plague in 1919, the State Government temporarily took over the hospital and it was operated for a short while by the Perth Public Hospital Authority.

As a home for incurable tuberculars, the whole of the 30 acres hospital property was acquired freehold in 1920 by the Department of Repatriation from Elizabeth Baillie for £5,000. The existing building was transformed into living quarters for the female staff, and a wooden chalet style ward, to accommodate sixteen tubercular patients, was erected by Contractor G.H. Fairbanks for £2,969 under the direction of our Works Registrar of the Public Works Branch of the Department of Works and Railways.

The hospital was known as the 'Repatriation Sanatorium' but, in 1924 its designation was changed to the Edward Millen Sanatorium, E.D. Millen being the first Minister of State for the Department of Repatriation.

In 1922, Vocational Trainees under the Department of Repatriation added the Verandahs and Covered Ways as part of their training. The State Government Architect passed the work as satisfactory, so advising the then Commonwealth Works Registrar, A. Ulrich. The number of patients fluctuated throughout the years from 25 down to 5 and serious consideration was given at one time to closing the Institution.

In 1935, 12 acres and 3 roods of this land were sold to the Perth City Council for £500. The object of this purchase by the Perth City Council was to permit a continuation of Berwick Street to be built at the rear of the Institution in order to relieve the pressure of traffic on the Albany Road, and to provide a recreation area for the surrounding district.

With the introduction of legislation affording medical treatment to all ex-soldiers suffering from pulmonary tuberculosis, it became necessary in 1936 to extend the accommodation for both patients and staff. This was effected by the erection of two additional Wards of timber, making three in all, two being open Wards and one containing eight single bed cubicles. The new Wards were opened in August 1937.

Due to the World War emergency, the Repatriation Sanatorium was handed over to the Perth Public Hospital Authority, and all the 59 patients were transferred to the State Sanatorium at Wooroloo on 17 March 1942. Any alterations and additions carried out by the State Government were firstly to be approved by the Commonwealth Director of Works. In June 1942, a weatherboard and asbestos emergency Operating Theatre was built.

Due to the shortage of accommodation at Wooroloo in 1943, it was decided that the Edward Millen Sanatorium should revert to its former use and become an institution for T.B. ex-members of the Forces, but that control of the Institution should continue to remain in the hands of the State Government.

On 1 April 1949 the Repatriation Commission resumed control, and the Department of Works carried out the necessary renovations and alterations. The hospital was then conducted as a Sanatorium until 30 September 1960, when the remaining tubercular patients were transferred to Repatriation General Hospital, Hollywood, and the Sanatorium was converted for use as a hospital to accommodate special categories of patients who did not need the full nursing, medical or technical services of a general hospital. It then became known as the Edward Millen Home or E.M.H. and admission of these new types of patients commenced on 10 October 1960.

At a cost of \$112,000 a Restoration Centre (Psychiatric Ward and Day Centre) was built and officially opened on 26 April 1968.

This Restoration Centre was a comprehensive therapeutic unit, embodying the functions of a half-way house, day and night hospital and sheltered workshop. It was designed to help the patients to re-adjust to normal life. It provided a family-style atmosphere in a setting akin to a private home. The Centre provided accommodation for 18 new beds and a Workshop space for 40 patients.

In 1971, the Centre was converted to a Rehabilitation Unit where patients suffering from Hemiplegia, late treatment of fractures and post-operative orthopaedic conditions could be helped to return to their homes. An active program of Physiotherapy and Occupational therapy is still pursued in conjunction with the home-style atmosphere.

In June 1973, one Ward was converted to a Nursing-Home Care Ward with a bed capacity of 14.

The hospital now has a 55 bed capacity, and has a 79% occupancy of 60% medical and surgical patients and 40% nursing home type patients.

### 17.3 REPATRIATION ARTIFICIAL LIMB AND APPLIANCE CENTRE

Not very long after the first Commonwealth Artificial Limb Factory was established at the Caulfield Hospital, Victoria in 1917, the first Artificial Limb Factory in Western Australia commenced production on 1 November 1918 in a building erected by the Defence Department within the grounds of the 'No. 8 Australian General Hospital' at Fremantle. It was staffed by three partially trained ex-soldiers and referred to as 'The Artificial Limb Fitting Depot'. The factory was transferred to the control of the Department of Repatriation exactly two years later; 1 November 1920. It continued to operate at Fremantle until 9 June 1921, when it was removed to premises on the corner of Aberdeen and Fitzgerald Streets in West Perth that had previously been used for the training of returned servicemen in carpentry.

In order to manufacture all classes of surgical appliances, crutches and the like, in addition to artificial limbs, it was necessary to effect building alterations costing £808, but by 1922 a decline in demand had begun, and in 1925 it was apparent that operations had become uneconomical. It was decided to remove the factory to another unused Vocational Training classroom within the temporary Repatriation Branch Office premises along Riverside Drive.

Under G.S. Cook, then Works Director of the Department of Works and Railways, the clerical classroom was quickly converted to a small artificial limb factory.

In 1931, 'surgical boots and repairs thereto' was added to the small factory's output.

By 1943, due to cramped conditions, it again became necessary to enlarge the factory. More convenient and larger leasehold premises were found at 547 Murray Street, on the corner of

George Street. Modifications were designed by the Allied Works Council of the Works and Services Branch of the Department of the Interior, and the building alterations were carried out by W. Fairweather & Son for £872; the factory was fitted out by Day Labour of the Works and Services Branch in November 1943.

During 1949/50, works were completed to expand the premises. The Lessors agreed to erect the main fabric of a building to the requirements of the Department on the adjoining block of land, and the internal work was undertaken by the Department of Works at a cost of £5,490.

The new building gave the factory a total area of 7,400 square feet of floor space.

At that time it was not known that within five years the present Mitchell Freeway would be planned to pass through their factory site.

By 1960 it therefore became necessary to plan for the erection of a new building within the boundaries of the Repatriation General Hospital at Hollywood.

During the financial year 1961-62, work was commenced by Misses & Mills on the construction of the Repatriation Artificial Limb and Appliance Centre at the Repatriation General Hospital, Hollywood. The Centre at that time occupied an area of 10,000 square feet and was the most modern of its kind in Australia. The later Repatriation Artificial Limb and Appliance Centres in both Queensland and South Australia was modelled on the Hollywood design. About one-third of the floor area is used for treatment and the training of amputees, one half for the factory and its store; and the balance for visiting medical specialists, physiotherapists, occupational therapists and social workers. The building was built for £51,000. It was opened by the Hon. R.W. Swartz, M.B.E., E.D., M.P., the then Minister for Repatriation on 26 February 1963.

During 1977/78, the building was fully air-conditioned and the store room was extended at a cost of \$173,119.

Since 1922, the factory has undertaken work for other than returned soldiers depending upon its ability to meet these outside demands and the availability of privately operating artificial limb makers.

In 1962, it was decided to omit the word 'factory' from the title and to call them 'Repatriation Artificial Limb and Appliance Centres', a title which indicates fully the scope of the treatment afforded to amputee patients.

#### 17.4 OUT-PATIENTS DEPARTMENT (CLINIC)

When in 1922, the Repatriation General Hospital at Fremantle, together with the Out-Patients Department in Aberdeen Street, Perth were both closed, the Out-Patients Department also removed to a newly erected building in the Perth Public Hospital grounds at the Western end of Murray Street, Perth.

The treatment of out-patients continued at Perth Hospital, until it became apparent that the accommodation was inadequate for the increasing number of patients. The Repatriation Department was unable to secure sufficient medical examination rooms, and the waiting rooms and facilities for patients was most unsatisfactory.

In August 1945, the Repatriation Commission entered into negotiations with the Air Board, in an endeavour to secure the use of the Air Force Training Centre, situated in Bazaar Terrace, Perth as an Out-Patient Department; many of the facilities required by the Repatriation Commission were already installed there. However, after prolonged negotiations, advice was received that the buildings, when evacuated by the Air Force, would pass to the Department of Post-War Reconstruction. However, by arrangement between the Department of Post-War Reconstruction and the Repatriation Commission,

3 huts and essential out-buildings were allocated for use as an Out-Patient Clinic.

In October 1946, the Department of Works and Housing made modifications to the huts to fit them for use by the Out-Patients Department; the cost of these alterations was £2,500.

The transfer of the Out-Patient Clinic from Perth Hospital to Bazaar Terrace, Perth took place on the 28 and 29 June 1947, and the new clinic was opened to Repatriation Department patients on 30 June 1947.

The Out-Patient Clinic operated from the Bazaar Terrace huts until early in 1959 it was removed to newly built premises on the first floor of the Repatriation Section of the new Government Office Building at the foot of William Street.

The Out-Patients Clinic occupied its new quarters in this city building until 1976 when it transferred finally to its own newly erected Out-Patients Department within the Repatriation General Hospital at Hollywood. The new building has a frontage to Monash Avenue and forms a winged extension to the Administrative Block.

The new building was designed and documented by the Department of Works and Housing in 1974 and constructed by R.D.C. during 1975/76 for a cost of \$907,000.

Accommodation provided in the new wing comprises X-Ray facilities together with an X-Ray film store. Chiropody, Pathology and an Eye Clinic on the lower ground floor, whilst on the ground floor there are Consulting Rooms, the Dispensary, Clerical Offices and Rooms for Medical Officers. Additionally, facilities for Physiotherapy and existing officers were modified and upgraded.

#### 17.5 EX-SOLDIERS' MENTAL HOSPITAL (LEMNOS)

Prior to the Great War of 1914-1918, mental cases were confined to the Claremont Hospital for the Insane controlled by the State Government of Western Australia.

Members of the Australian Imperial Forces invalided home because of mental instability were admitted to this Institution irrespective of the severity of the disease. Later, however, an attempt was made to segregate the refractory patients from the milder cases, towards which purpose the Defence Department acquired a property along the Cottesloe Beach situated approximately 13 kilometres from Perth and in close proximity to the Indian Ocean. This Institution was known as "Stromness Hospital" and was capable of accommodating some 30 patients.

The administration of this Institution was taken over from the Defence Department by the Department of Repatriation on the 7 November 1920; there being at that time 19 patients and a male staff of 10. The building, situated on a block of ground of approximately three-quarters of an acre, had a 10 foot verandah on all sides which had been closed completely with wooden lattice. The lattice work was later removed from the verandahs by the Department of Repatriation to permit patients to roam the grounds and to indulge in minor forms of gardening and the male staff was changed to female staff. Although these improvements were appreciated, it was apparent that drastic action was necessary to adequately care for mentally deranged ex-soldiers.

Whilst the 'Stromness' patients remained at that institution, those at the Claremont Hospital for the Insane were transferred to a separate unused block of buildings at that Institution where conditions were somewhat improved.



As a result of continuing public outcry and demands from the R.S.L. over the type of accommodation and treatment offered to ex-serviceman, it was decided to erect a new Mental Institution on 110 acres of State Government owned land at West Subiaco, distant a little under 4.5 kilometres from the centre of Perth, and having a frontage to Stubbs Terrace adjacent to the Irwin Training Centre at Karrakatta.

This new hospital was officially designated the 'Soldiers' Mental Hospital', and became more familiarly known as 'Lemnos'. It was built for 70 patients, completed in 1926 and officially opened by His Excellency, Colonel Sir William Campion on 12 July 1926.

A notable feature of the planning of this Institution was the almost complete absence of means of confinement of the patients. There are no high fences, walls and the like. In only one block is there any mode of restriction, and this is a fence approximately three feet high around the exercise yard of Block A, which accommodates the most refractory patients of the Institution.

The grounds of the Institution are extensive. In the immediate vicinity of the Wards the land is well cultivated, growing numerous shrubs, flowers and trees. There is quite a large area under grass behind Blocks B and C for the exercise of patients in these Wards; there are also two full sized tennis courts and a large playing arena frequently used for cricket matches and games of hockey, that thus provides some entertainment for the patients. To the North and West of the institution are many acres of virgin bushland, whilst on the north side there is also a large block cultivated as a vegetable garden together with an area used for raising poultry.

This Mental Institution was created under an Agreement between the Commonwealth Government and the State Government of Western

Australia. The State undertook to erect and equip the Hospital. The Agreement was for a period of five years, commencing as from 26 November 1925 and was to continue in force thereafter until terminated by either party giving six months' notice. On the termination of the Agreement the Hospital and equipment therein is to become the property of the State absolutely, subject to payment by the State to the Commonwealth of an amount representing the valuation of the hospital and equipment at that date.

This Agreement was negotiated between the Acting Prime Minister, the Hon. Earle Page and the Premier of Western Australia, the Hon. Sir James Mitchell and was signed on 1 March 1924.

The Hospital, built to the satisfaction of the Director-General of the Department of Works and Railways, was designed on a horizontal plan with a two-storyed administrative block and female quarters, and is entirely of brick. The original buildings costs £34,088, and a Sick Ward was added later at a cost of £1,159.

Additionally to the accommodation provided at Lemnos, the Repatriation Department, in 1947, leased an area 18.3 metres by 7.3 metres along Davies Road, Claremont, within the grounds of the State Mental Hospital. The Department of Works obtained two 'Livingstone' huts and re-erected them for temporary use as an Occupational Therapy Centre for ex-service personnel. These were later extended by the patients themselves. Then later in 1948 a hut was built at Lemnos for Occupational Therapy by trainee labour under the Commonwealth Reconstruction Training Scheme. This proved to be inadequate and in 1957 an additional Ward and an Occupational Therapy Centre was added. The half share of the cost of these buildings by the Department of Repatriation was £35,955. Improvements over the years included a remodelled kitchen and renovations to the ablution facilities. In 1969, extensions were made to 'A' Ward to provide a Day Room for recreation purposes.

The existing buildings comprise:-

- 2 storeys Administrative Block and Female Quarters
- 3 open Wards
- 1 Semi-enclosed Ward
- Sundry ancillary buildings

The State and Repatriation Commission are joint owners in equal shares of the hospital, other than as regards ownership of the land site, but including all fixtures and fittings therein and including all equipment of the hospital plant and machinery, etc.

The bed capacity is 125, and accommodation will be available at all times for 62 patients of the Repatriation Commission.

The control of the Institution to comply with the State Lunacy Laws is in the hands of the Inspector General of the Insane.

BILL PURICH

## 18. PROJECTS FOR ABORIGINAL COMMUNITIES

The involvement of the Western Australian Region of the Department with projects for Aboriginal Communities started late in 1975. At that time, many Aboriginal Communities were engaged in development projects through a 'Grants in Aid' scheme funded by the Commonwealth Government. These developments included village housing with services of electric power, roads, water supply and sewerage disposal as well as commercial enterprises such as fishing, pastoral and agriculture. To undertake these development projects, the Aboriginal Communities engaged social advisers and professional technical consultants. The programs were monitored by the Department of Aboriginal Affairs.

Because of the complexity of the projects and the expenditures involved, the Department of Aboriginal Affairs requested the assistance of the Department of Construction to review the projects in hand and to advise on new building and engineering proposals.

An extensive survey was made in 1976 which covered the main Aboriginal Communities in the Kimberleys, Pilbara and Eastern Goldfields with objective of recording the existing conditions and developments, assessing the skills and resources available for continuing or new development and generally gaining an appreciation of the conditions and lifestyles prevailing at the settlements. A three volume report was produced covering this survey which is invaluable as a reference for ongoing work.

The Australian Government by Cabinet Decision 1564 of 23 September 1976 declared as a condition to the 'Grants in Aid' program to Aboriginal Communities, that the Department of Construction would have a supervisory role for construction and development projects. This involvement to be as a

consultant service directly to the community for design and/or construction tasks, or a review and monitoring role in the case where private consultative services are engaged.

Under this arrangement the Region operates in two broad over-lapping areas of technical advice to the Department of Aboriginal Affairs and professional consultant service to individual aboriginal communities.

As advisers to the Department of Aboriginal Affairs the Region activities include:-

- . Investigation of aboriginal community submissions and feasibility reports on project proposals.
- . Reporting on existing building assets and engineering services.
- . Advice of estimates to develop programs for new work and continuing services and maintenance of existing assets.
- . Preparation of preliminary town plans for new projects and to rationalise existing community developments.
- . Work on committees, viz: 'Aboriginal Affairs Co-ordinating Committee' involving the membership from State and Commonwealth Departments, Authorities and Aboriginal representatives, and

'The Village Management Liaison and Co-ordinating Committee' which includes representatives from State and Commonwealth Departments and Authorities specifically planning for the training of personal and management procedures for the on-going maintenance of buildings and services in villages as they are established so that the Aboriginal communities can cope with village management functions.

- . Assisting in the establishment of private consultant commissions with the communities, reviewing the consultants design and monitoring the execution of the works.

This work is done by the Region as a service to Government for no fee.

As consultants to the Aboriginal communities, our work attracts a professional fee and includes:-

- . Detail development of village 'town plans'.
- . Design of engineering services, water supply, roads, electric power, sewerage systems.
- . Design of community buildings such as workshops and stores.
- . Management of construction by Aboriginal community labour, contract, specialist skill direct labour.

It is interesting to review the various ways that the Department has been involved to assist communities to construct their projects. The organisation which is arranged to manage a project for any particular community depends on the resources and skills available to that community.

Some examples will be given to illustrate the flexibility needed to deal with projects which in themselves have very special requirements of management of the project to match the circumstances prevailing at the community.

Mt. Margaret, five houses for Aboriginal Movement for Outback Survival (AMOS)

A community study was made by the Aboriginal and Torres Strait Islander Housing Panel (ATSIHP) and five designs of houses were developed about a basic structural frame. A variety of different materials were selected to try their suitability and acceptance by the community; also to gauge the skills available within the community to undertake the construction.



HOUSE BUILDERS BEAGLE BAY

The ATSIHP as design consultants, requested the Region's assistance to manage construction. In consultation with the community, a group of Christian helpers named Fish Projects, provided a nucleus of skilled tradesmen and helpers to run the project. The community gathered together Aboriginal workers (many of them AMOS members living away from Mt. Margaret) to provide job labour. Specialist tradesmen were provided the Region and some sub-contracts were arranged to dovetail into the total work force. The Region arranged all material supplies. The State Energy Commission arranged electrical generation and distribution.

#### The Mowamjum Community, Derby

This community has engaged consultant architect, John Flower, to design a new village. Twelve houses have been built under the control of the consultant using a mix of contracts and community labour. The Region in this instance has provided a review and monitoring service to the Department of Aboriginal Affairs.

#### The Menzies Cultural Society

This community proposed to purchase two houses which were surplus to Westrail. The Region surveyed the houses on behalf of the Department of Aboriginal Affairs and recommended that they were reasonable value and capable of restoration.

The Society then commissioned the Region on a full consultant basis to design and construct the restoration of the houses. The Region employed a full time foreman carpenter who, with a gang of Aboriginal labour, made up of Society members performed the majority of the restoration work. A sub-contractor, who also used Aboriginal labour, was engaged for concrete and plastering work; another sub-contractor did the electrical work. Plumbing was done by a tradesman employed by the Region.



### The Warburton Community

The community engaged the Region on a partial service basis to design, call tenders and supervise the construction of three transportable houses: the Region's commission ceased with the despatch of the units from Perth. Site connections and services were arranged by the community.

### The Nanganawilli Community

The Nanganawilli Community (Wiluna) had a requirement for ten basic houses.

The Department of Education placed a manual training instructor with the community to assist in teaching building skills. The community were funded by a scheme to pay wages for 'Community Development Employment Projects' (CDEP), which in principle is working on community projects for a wage slightly in excess of the Social Security Unemployment Benefit. The Region designed basic houses which consisted of one room and a very large verandah. The buildings have a steel frame which in the future can be extended to form a larger house that would conform to building by-laws.

The community constructed the buildings firstly under the guidance of the instructor. Later, when the instructor left the area, the Region provided a foreman carpenter to manage the project. The community made cement bricks and laid them to enclose the room. The Region provided tradesmen for the plumbing and electrical work.

The variety of work undertaken for Aboriginal Communities has been very extensive and has involved many sections of the Regional Office. The majority of the technical investigations has been undertaken and co-ordinated by Engineer, Mr Keith Hand, who has spent much time travelling vast distances and consulting with many communities. Some of

the tasks undertaken include: housing, electrical generation and distribution, water exploration, boring and supply; dam construction and roaded catchments; sewerage treatment; surveying; repairs and maintenance to buildings and engineering services; advice on suitability of sites for proposed community villages; and construction of community public buildings and workshops.

In the three years 1976 to 1978 expenditure on Aboriginal community projects has been approximately \$1.5M, and this is really only the tip of the iceberg.

FRANK RENNIE

## 19. CARNARVON WHALING STATION

Whaling off the Western Australian Coast is recorded as far back as 1790 and a total of over 400 whaling vessels are listed as having operated off our coast between 1790 and 1890.

Ports operated from include Fremantle, Albany (King George Sound and Princess Royal Harbour), Vasse, Bunbury, Shark Bay, Geographe Bay, Flinders Bay, Twopole Bay, Doubtful Island Bay, the Recherche Archipelago and Cape Riche.

After the settlers arrived at Fremantle the catching of whales in Cockburn Sound was considered important enough to warrant cutting a tunnel through the limestone hill at the foot of High Street under the new prison to enable the whale products to be more easily transported into the town. The tunnel was completed in January 1838. A land based whaling station operated from Pt. Cloates, north of Carnarvon (near Coral Bay) between 1912 and 1920.

The Nor-west and Albany Whaling Companies pioneered post-war whaling in Western Australia and in May 1949 the Commerce Minister Mr Pollard introduced the Whaling Industry Bill to authorise the establishment of the first government owned shore station in Australia. The governing body to be known as the Australian Whaling Commission had its Headquarters in Melbourne and its administration office in Perth.

It was decided that a shore station should be set up somewhere in the north west of Western Australia and that if at all possible, a commencement should be made for the catching and treatment of whales at the beginning of the season about June 1950.

The Chairman of the new commission Mr Jim Bowes accompanied by Mr C. Rosenthal, acting executive engineer H.O. and

Mr Clive Wade of this branch left for Carnarvon on 11 August 1949 to investigate suitable sites for the establishment of the station.

The following sites were considered:-

- Port Gregory
- Dirk Hartog Island
- Bernier Island
- Carnarvon Babbage Island
- Carnarvon Teggs Channel
- South Bejaling and
- Mauds Landing

Of these Dirk Hartog had been recommended prior to the appointment of the Whaling Commission. However, following the investigation the Babbage Island site at Carnarvon was selected as the most suitable.

Babbage Island is a low sandy island situated at the mouth of the Gascoyne River which was connected at that time to the town of Carnarvon by a clay topped causeway liable to be flooded at very high tides and whenever the river was running. There was also a trestle bridge carrying the railway from Carnarvon to the mile long town jetty which was situated on the west side of Babbage Island.

Mr W.P. Cocking who was Senior Mechanical Engineer was appointed Design Project Officer. Surveyors were sent to the site to survey the road and factory locations and the sea bed immediately off shore. At a meeting in Head Office attended by Mr Cocking on 26 September, major decisions were taken which affected the general arrangement of the proposed factory, its method of working and construction.

The station was to be designed to treat 600 humpback whales over a 100 day season and to obtain whale oil, meat meal and

by a process new to the whaling industry whale solubles (a material like marmite). The machinery for this process was to be supplied by the Sharples Lassen Corporation of America. Output was expected to be 4500 tons of whale oil, 6000 tons of whale solubles and 36,000 bags of meat meal each season. Fuel usage was expected to be between 2000-3000 tons of fuel oil per season.

The task facing the department at this time was immense. The site had to be cleared and levelled, road and rail access built, slipway and flensing deck built, factory, office and accommodation buildings acquired and moved or built from new materials, tankage constructed for products and fuel, boilers, diesel generators, winches and all power and piping materials obtained and installed. Detail design work for all of this had to be carried out and installation of whale cookers, meal dryers and the new centrifuge machinery to be supplied by the whaling commission had to be co-ordinated with the design and the work carried out and all of this in a target time of 8-9 months in a post war period when all materials were in short supply.

By 19 September, a site team had started civil work, arrangements had been made to obtain, dismantle, transport and re-erect the main workshop building at the wartime RAAF base at Geraldton to use as a main factory building. Accommodation huts to house the construction force and the proposed 120 men operating team were obtained ex-RAAF. A water supply from the Country Water Supply Departments scheme at Carnarvon had to be installed together with fuel and product lines to and on the mile long Carnarvon jetty. Tanks from the wartime distillery at Collie had to be dismantled and transported to Carnarvon for re-erection, and later tanks from Manus Island and Learmonth were also used.

On 26 October just as the project was really getting into gear there was a sudden slow down due to the State Government

objecting to the erection of the station and on 31 October Mr M. Pearce the resident engineer was advised to arrange cessation of the work.

Urgent consultations between Commonwealth and State Authorities from Prime Minister - Premier level down resulted in permission being given to carry on with the work on 16 November. The position at that stage was that the road through the sand hills to the site had been bulldozed and partly stabilised with clay, the camp site area had been graded and two small huts for stores erected. Seventeen huts and the factory building were ready for despatch to the site, orders had been placed for electrical generating plant, steam generators and a meal dryer and work was about to start on dismantling tanks at Collie.

The whaling commission purchased an ex-army landing barge which was sailed around from Brisbane and was used to transport the 25 ton Kvaener cookers and other heavy materials from Fremantle to Carnarvon.

The first cookers arrived in Fremantle on 28 February 1950 and about this time following a visit to the site by Mr M.G. Dempster, Chief Civil Engineer H.O. the decision was taken to change the flensing deck and slipway from concrete construction to timber in an effort to speed up construction. This was an unfortunate decision in the light of later events as the timber construction allowed leakage of blood and other fluids through the flensing deck on the machinery below and also because the timber construction allowed too much vibration on the mezzanine floor and winch deck.

By June the slipway flensing deck, mezzanine floor and winch deck were substantially complete but machinery delivery was still incomplete, steam and process piping still had to be erected and provision of tankage for fuel and products had just started.

It was evident that the planned completion date would not be met and discussions were held with the A.W.C. on the possibility of operating for a shorter season only.

In retrospect it was a very optimistic estimate that assumed work could be completed by the 15 of June 1950 and in the event it was not until the 23 September 1950 that the first whale was caught, flensed and cooked.

Various expedients were resorted to in an effort to push forward work essential for whale processing the plan being to complete less important work after the 1950 season. Mr R. Cooper, Supervising Engineer Construction moved to site on a full time basis. This and other moves resulted in work being far enough advanced to allow two whales to be caught and processed on 23 September. This trial run showed up serious faults in the plant which had to be altered before further whales could be treated. Modifications were carried out and whaling resumed on 19 October. A newspaper report at the end of the month which was the deadline for the 1950 season read as follows:-

"On October 19, crews of the catchers S.S. Gascoyne and S.S. Carnarvon again set out to make kills. By last Sunday night they had killed 35 all, except one of which were more than 40 feet long. The largest was 46 feet. An average of eight tons of oil from each whale was obtained."

40 whales were processed for the season and oil, meat and other products worth £46,000 were recovered.

The remaining work to complete the station was carried out between November 1950 and 31 May 1951 when the station was handed over to the Australian Whaling Commission.

Cost of work carried out by this Department was approximately £530,000 and total cost to the Whaling Commission £1,080,840.

Whaling for the 1951 season started on 25 June and a report from the Commission at 24 August said that the station was running very satisfactorily. Mr Cox, the Sharples Lassen Engineer was quoted as saying that oil quantity and solubles quality are superior to any other world station.

327 whales had been caught to that date averaging six per day with average yields per whale - 8 tons plus of oil, 7-8 tons solubles and  $2\frac{3}{4}$ -3 tons of whale meal. By 24 September, 537 whales had been processed.

In 1956 the Station was sold to Nor-west Whaling Company for \$800,000 and in 1957 Nor-west amalgamated its Pt. Cloates and Carnarvon quotas and processed 1120 whales.

Whaling ceased due to lack of whales in 1963 and the station was later converted to a prawn processing factory.

The project from a Departmental view was a most unusual one and the time of 10 months from start to first operation would be very difficult to match today.

TERRY RYAN



## 20. DEPARTMENT OF SCIENCE

### MAN INTO SPACE PROGRAM

For the Man into Space Program the National Aeronautical and Space Administration (NASA is a United States Government Agency) sought through the Weapons Research Establishment in South Australia, the co-operation of this Department to establish a space tracking station at Muchea, Western Australia.

On 12 August 1959, a meeting was held in Melbourne to outline the requirements of 'Project Mercury' and the Muchea Station. The site chosen was approximately 80 kilometres north of Perth on the coastal sand plain.

A very tight construction program was required and special contract arrangements were necessary to achieve an acceptancy with time to install the sophisticated tracking and command equipment. Designs were prepared by the Western Australian Region and a contract negotiated in February 1960 for completion in August 1960. The works cost £137,000.

The first 'Mercury' flight was successfully undertaken on May 5, 1961 by B. Shepard Junior with a flight time of 15 minutes. The project was a triumph of co-operation between this Department, WRE, NASA, the station construction Contractors and the Space Communications and Tracking Equipment Contractors. On February 20, 1962 John Glenn in Mercury Friendship 7 was the first American to orbit the earth and it was he who called Perth the 'City of Light'.

The citizens of Perth responded to an appeal by the Lord Mayor to light up the city and suburbs and Perth was positively identified by the orbiting astronaut from space.

The Muchea Station played an important part in the Mercury program and gained world wide publicity for Perth and Western Australia.

The paths of subsequent space vehicles demanded that a new location be provided for telemetry and command and in August 1962, an expert team from Goddard U.S.A. and WRE surveyed the Carnarvon area for a site to establish a new space tracking station for orbital flights out of the range of Muchea and Woomera.

A site on Brown's Range about 10 kilometres north east of Carnarvon township was selected and locations determined for the telemetry aeriels, tracking radar and command buildings were determined. The station was required for tracking manned and unmanned satellites for a number of space projects. Carnarvon could provide communications for command of spacecraft and signal injection into orbit over the Western Australian Northern coast. Data acquisition and tracking capabilities of a very high order were required. An 85' 0" diameter steerable radar FPQ6 followed and tracked orbiting spacecraft whilst in view of the aerial. The position of the station in relation to other tracking stations in the network was established by first order survey.

Again a very tight construction schedule was required to allow access to buildings by December 1963. The Department's South Australian Region assisted with documentation and a series of contracts were negotiated in February 1963. The Construction dead lines were met and installation of equipment commenced on time. On March 23, 1965 'Gemini 3' with Virgil Grisson aboard made a flight of 3 orbits in a time of 4 hours 53 minutes. The 'Gemini' flights continued until 1966.

For the moon landing additional equipment was required and another crash program was undertaken to uprate the command and telemetry functions and to install a unified S. Band Radar.

A major \$700,000 contract was negotiated in June 1965 for the Apollo program. Work was completed on time for the testing of the program and the first manned Apollo 7 flight on October 11, 1968. On 16 July 1969 during the flight of Apollo 13 Neil Armstrong was the first man to step onto the Moon.

John Kennedy on May 25, 1961 as President of the United States said "I believe that this nation should commit itself to achieving a goal before this decade is out of landing a man on the moon and returning him safely to earth." The Carnarvon tracking station held a key place in the successful Man in Space Program.

In total approximately \$2M was expended on building and services by this Department. In 1976 the Station was deactivated and was taken over by Telecom to provide a station for overseas Radio Australia broadcasts to replace facilities lost during Cyclone Tracy at Darwin.

KEITH HAND

## 21. LEARMONTH SOLAR OBSERVATORY

The United States Government is currently establishing a network of solar observatories around the World which will permit continuous observation of the Sun. When complete, the observatory at Learmonth will join others already constructed or under construction in Massachusetts, New Mexico, Puerto Rico, Hawaii and the Middle East in monitoring solar phenomena such as flares, plages, sunspots, prominences and magnetic fields. The observatory will be equipped with an optical telescope and three parabolic radio telescopes of 3', 8' and 28' diameters, together with the associated optical and electronic equipment necessary to analyse and record the observations made and communicate the results throughout the network.

As with all the observatories to be built, the telescopes and scientific equipment will be installed by American Contractors. The Department of Construction under the direction of the American Project Manager, Mr Bob Cook, is responsible for the design and supervision of construction of all building works and services.

There are three main buildings on the site and although they are not particularly large or complex structures, there were many stringent design controls placed upon them which reflected the precise and sensitive nature of the equipment they are to house. For example, the optical telescope building was required to have a coefficient of heat transfer between the inside of the building and the outside skin of  $0.285 \text{ watts/m}^2 \text{ }^{\circ}\text{C}$ . Such a low coefficient is necessary to prevent heat leaks through the building which might generate thermals which would interfere with sightings through the telescope. To achieve the required degree of thermal insulation, the building was clad externally with 150 mm thick metal faced polystyrene panels similar to those used in coolroom construction. These

panels incidentally are also similar to those adopted by the Department for the manufacture of pre-fabricated buildings for the Antarctic. As well as heavily insulating the optical telescope building, all airconditioning and exhaust vents were terminated well away from the telescope and the exposed surfaces of all structures on the site, including the buildings, lighting mast, fire hydrants and even the concrete paths and pits will be painted white.

To complete the building works and services by the November 1978 target date it has been necessary to fast track the project. The Department's own Day Labour Force constructed the access road, extended the airfield water supply to the site and completed the preliminary earthworks. Separate contracts were let for the manufacture of the frequency converters, supply of the chillers and for the provision of underground power to the site. Geraldton Building Company was selected as the Main Contractor for the building works and services. A Contract, with a construction period of 24 weeks was signed with the Company on 16 June 1978.

The value of the Australian component of the work is approximately \$900,000. Although the project is being funded by the United States Government, the observatory will be operated jointly by the Australian Department of Science as well as the United States Air Force.

KEITH HAND

## 22. METEOROLOGICAL SERVICE

"I want you to keep a record of every circumstance in the weather affecting health". This was the instruction given in 1829 by Captain Stirling to the Colonial Surgeon and in doing so, he commenced the first official weather recording in Western Australia.

Prior to 1829 records of weather conditions, mainly winds, were kept by the navigators who sailed the western coastline, the first of these being recorded by Halley in 1686. After 1829, records were kept by such people as Collie at Albany in 1831/32, Ommaney at York in 1833 and Hamilton at Albany in 1841. These early observations ceased around 1853.

The early recordings initiated by Captain Stirling were kept at the office of the Surveyor General, Mr J.S. Roe and his successor Mr M. (later Sir Malcolm) Frazer until 1875. In 1876 a Meteorological branch was added to the Surveyor Generals Office and remained under the direction of Mr M.A.C. Fraser until 1896, when it was transferred to the new State built Astronomical Observatory at Mt. Eliza under the Government Astronomer, Mr W.E. Cooke. In 1906 Federal Parliament authorised the setting up of a Bureau of Meteorology as part of the Department of the Interior, with power to take over all state operated Meteorological Departments. A former member of the Western Australian Observatory staff, Mr E.B. Curlewis became the first Divisional Meteorologist for Western Australia in 1908 when the Commonwealth control commenced.

The precise location of the instruments during the first 55 years of observations is not known but is believed to be in the neighbourhood of the Surveyor General's office in Barrack Street. From 1885 to 1930 the instruments were located in the gardens adjacent to the Supreme Court, and from 1930 to 1967 at the Observatory building in West Perth. In July 1967, the instruments were transferred to their present location,

adjacent to the Perth Regional Office in Wellington Street.

After the somewhat random early recordings which ceased about 1853, change came quickly. From 1855 onwards, the first climatological networks were planned and rapidly established with ready co-operation from country residents. For some of the older established areas reasonably long temperature and rainfall records are available.

From 1908 when the Commonwealth assumed control of meteorology in Western Australia, the building and construction requirements of the Bureau of Meteorology were looked after firstly by the Western Australian State Public Works Department as the Commonwealth Agent. In the early twenties the Department of Construction, then the Department of Works and Railways, took over this responsibility and has played an increasing role ever since.

In the early years up to 1950, little construction work took place as most weather recording was carried out at established meteorological offices in the cities, at major aerodromes and by Post Office staff and property owners in country areas. Also, there was none of the sophisticated equipment requiring special housing such as we know today. However, some building work did take place and one job of interest is the Meteorologist's residence at Broome. This building was constructed in 1940/41 and the design is typical of tropical area housing of that era.

The house had a central living and sleeping area surrounded by wide verandahs, one section of which was flywired and was referred to as the 'mosquito room'. The kitchen, laundry and bathroom/toilet were constructed as appendages to the rear of the main structure. Outbuildings included native servants quarters and stables. Rain water tanks of approximately 20,000 litre total capacity were sited around the building.

Very substantial construction methods were used such as concrete stumps for white ant protection, dressed timber framing walls with full height jarrah tongue and grooved board lining to the central rooms. The roof was sheeted with corrugated asbestos cement with cyclone battening and the verandah walls were covered with flat asbestos cement sheet to sill height. Galvanized iron shutters were fitted in lieu of windows to allow maximum ventilation in hot weather and adequate protection in the wet season or during cyclones.

This residence which has been gradually updated in living standards (the servants quarters no longer exist), is still occupied by Meteorology Department personnel, and it is expected to give a considerable number of years further use.

During the war years 1939 to 1945, meteorology was the responsibility of the Royal Australian Air Force and construction work for the RAAF Meteorology Sections was carried out firstly by the Civil Construction Corps and later by the Allied Works Council to the requirements of the Department of Defence. In the post war years, technological advances such as radar were to bring many changes and new methods of weather forecasting, with the Department of Construction providing the specialized buildings for the equipment and housing for the operating personnel. The first 'Radar Weather Watch' station in Western Australia was built at Forrest on the Nullarbor Plain in 1955. This was the first of a network of ten such stations to be constructed throughout the state. The other nine were constructed at Carnarvon, Albany, Broome, Geraldton, Port Hedland, Halls Creek, Esperance, Meekatharra and the latest at Learmonth in 1978. These buildings include special large rooms with wide opening doors for weather balloon filling and hydrogen gas generator rooms adjacent.

The Learmonth Project includes a Meteorological Building at the airport and a separate Radar Head Building at Cape Range,



17 kilometre to the north west. The Meteorological Building which includes accommodation for meteorological equipment, administrative office, ballon filling annexe, hydrogen generation room and storage area, is of cavity brick construction, strengthened for cyclonic conditions. An instrument enclosure is located nearby.

The Radar Head Building, also of brick construction, houses the weatherwatch radar control equipment and standby diesel generator. The rotary radar antenna is located on the building's flat roof and weather information recorded is transmitted to the Meteorological Office at Learmonth via a radar remote control link. Power to the building is supplied through a 33 kv overhead transmission line from the Exmouth/Learmonth transmission system, 8.7 km away.

Modern control systems installed at this installation enable complete remote control of the Radar Head Equipment from the airport building. The weather watch radar is at least equal to that installed anywhere else in Australia.

Other construction work for Meteorology includes 'Cloud base Searchlight Facilities' at Perth, Derby and Wyndham, a 'Satellite Readout Station' at Swanbourne for receiving weather pictures from Satellites, 'Automatic Weather Stations' at Ashmore Reef, Adele Island, Scott Reef, Rowley Shoals and Prowse Island and housing for Meteorological Branch personnel throughout the state. Of these projects, the Ashmore Reef Weather Station is probably the most interesting, firstly because of its remote location and unusual nature and secondly because it was the first automatic weather station to be constructed off the Australian Coast.

The Ashmore Reef weather station was established in 1962 on West Island, one of the Ashmore Group, located 570 kilometre north of Derby and some 200 kilometre south of Indonesian island of Timor. The remote location presented considerable

difficulties in terms of transport of men, material and equipment; the landing of same on the island which is surrounded by coral reefs; and the accommodation and messing of the work force.

A considerable amount of preliminary planning took place to arrange transport and other items necessary for the project. Dry runs were held in Perth to ensure that the prefabricated building assembled without trouble. The building, other materials, supplies, fuel and equipment was then transported to Darwin for loading on the sea transport which consisted of the Royal Australian Navy patrol vessel H.M.A.S. Banks, the Kalumburu Mission Barge 'St. Joseph' and the small coastal freighter M.V. Jensah.

The construction force left Perth on 6 August 1962 by plane for Darwin where they spent the next two weeks preparing and loading materials and equipment. In Darwin, the Perth party of eight were joined by two Meteorological personnel who were to install the weather recording equipment.

The convoy departed Darwin on 20 August and on the first night out ran into bad weather. The M.V. Jensah broke down with pumps and rudder unserviceable, leaking seams and engine trouble, forcing the convoy to heave-to overnight. Repairs were effected by daylight and the convoy proceeded, but at reduced speed. After a slow and very rough trip, the ships anchored off West Island on the evening of the 23rd. Indonesian fishing boats were observed approximately five kilometres offshore.

Next day, inspection of the reef showed that passage was possible at high tide and at 6.00 p.m. high water the barge was run ashore. Plant and equipment was unloaded and moved to a safe position above the beach despite heaving going for the vehicles. It was necessary to lay matting over areas of loose sand dug up by turtles. Unloading proceeded over the next three days, and by late in the evening of the 27th all materials

were ashore and stockpiled adjacent to the construction site. The M.V. Jensah, her cargo unloaded, was no longer required and departed for Darwin on the 28th.

A camp was established on the 28th adjacent to the work site and washing and cooking facilities set up. Prior to this all cooking had been done over an open fire on the beach. Rats were very troublesome and it was necessary to place all foodstuff in the landrover cab overnight.

Water supplies were a problem despite a supply of fifty drums brought with the party. A well existed on the island but a previous visit by H.M.A.S. Diamantina had shown it contaminated with decomposing bird carcasses and by an Indonesian grave within two metres of the water supply. A new water supply was located clear of the contaminated well and the payloaders used to sink two drum bodies welded together. A pump was set up and a supply of better than 100 litres per minute was obtained. The water was satisfactory for washing and construction purposes.

An unexploded 500 lb. bomb was found by the Navy between East and Middle Islands but attempts to explode it with rifle fire were unsuccessful. In another incident, the barge crew were dumped into the ocean when a breaker capsized the Mission dinghy. A new outboard motor was lost but the crew were able to cling into the upturned boat and drift to the reef and safety. Five lifejackets on loan from the Navy, went to the bottom with the outboard motor and were also lost.

Construction commenced on 29 August and despite the difficulties encountered, work proceeded ahead of schedule. By 6 September the hut floor had been poured, the wind generator completed, one radio mast erected and all underground pipes and ducts installed and backfilled. An air drop of 900 kg of rations, mail and other welcome items was made by the RAAF this day.

Six loads were dropped and all landed within a 70 metre circle, about 140 metres from the campsite.

By 11 September work was well advanced and packing of some equipment ready for re-shipment had commenced. On 12th, a large party of Indonesian fishermen visited the island in two large dhows. Some bartering took place with these people, mainly clothes, cigarettes and the like for pearls.

On 16 September all work was completed, instruments installed and tested with the station on the air. The transfer of equipment and personnel off the island was completed by afternoon and both vessels set course for Darwin arriving there on the morning of the 19th. Plant, materials and equipment were unloaded, returned to stores and on 22nd the party left by plane for Perth.

The station continued to operate without undue problems until December 1970 when it was vandalised by persons unknown and nearly all equipment stolen. This included batteries weighing at least a tonne and  $\frac{3}{4}$  tonne of other items. By 15 February 1971 the station was back on the air but the building was twice broken into again that year. In 1973 the lot went, instruments and buildings, all stolen. Plans were drawn up for a redesigned station but with the advent of information from weather satellites, the project was abandoned. All that now remains is the building floor slab and the steel poles that supported the instruments; the bones of the station and the bones of the fisherman beside the well.

BILL HOLDSWORTH & MAX GALLAGHER

23. COMMONWEALTH SCIENTIFIC AND INDUSTRIAL  
RESEARCH ORGANISATION (C.S.I.R.O.)

"Science and technology are potent forces for change. Through scientific research man gains a deeper understanding of the world around him, through technology he employs this knowledge to use natural resources to achieve his own ends. For more than fifty years, CSIRO has contributed significantly to the changing pattern of our society by conducting scientific research not only for the benefit of Australia's agriculture and industry but also the benefit of the community as a whole."

The precursor of CSIRO first came to Western Australia in 1922 on the invitation of the State Government to research into the suitability of Western Australia timbers for paper pulp. It started as the Council for Scientific and Industrial Research (CSIR) with a small staff housed in a brick veneered building in the Western Australia University Campus. The research program was later extended to include investigations into the tanning and agricultural industries. CSIR worked jointly with the Western Australian Department of Agriculture on research into buffalo-fly pest, Kimberley horse disease and red-legged earth mite. In 1939, CSIR embarked on an extensive pasture investigation program followed by a mineral research program in 1940, a plant introduction program began in 1942 and a fisheries group was established in 1943. When CSIR became CSIRO in 1949, it was represented in Western Australia by 19 staff. By 1978 this figure had risen to more than 200 excluding officers based in Kununurra.

CSIRO is an autonomous scientific and technological research body supporting Australian Industry and Australian Community interests.

There are 37 divisions in CSIRO each with its own individual chief. Western Australia has representatives of eleven

divisions with two divisional headquarters - Land Resources Management and Mineralogy, now housed in the Floreat Park complex. The Department of Construction, at the various stages of the growth of CSIRO, constructed, extended and renovated the many small establishments of CSIRO scattered around the Metropolitan and Country areas. Most notable of these is the first building occupied by CSIRO on the University campus which was eventually handed over to the University in 1966.

In 1963/64, a large laboratory complex was designed to meet the pressing demand to house many of the CSIRO groups in Western Australia within one complex. The site for the laboratories is situated at the corner of Underwood Avenue and Brockway Road, Floreat Park. Stage 1 of the complex was completed in 1966 at the cost of \$1,220,000 and Stage 2 in 1971 at the cost of \$491,000.

The major laboratories of CSIRO in Western Australia are located at Floreat Park (Main Laboratory complex), Marmion (Fisheries and Oceanography), Helena Valley (Wildlife Research), West Perth (Regional Administrative Office), Kelmscott (Forest Research) and Kimberley (Tropical Agricultural Research).

Apart from the two Divisional headquarters, the Floreat Park complex houses groups from the Divisions of Mathematics and Statistics, Computing Research, Animal Production and Entomology. The library, which serves all Divisions is also part of the Floreat Park complex.

The complex comprises modern reinforced concrete and steel buildings with brick, aluminium and precast aggregate infill panels. It is fully air-conditioned and contains elaborate and extensive engineering facilities to service some of the most sophisticated scientific equipment.

Apart from the main 3 and 4 storey buildings, there are numerous single storey workshops, stores and glass houses.

The research of the CSIRO Divisions at Floreat Park is diverse, covering both biological and physical sciences.

The Division of Land Resources Management collects, researches and communicates information to decision makers (governments State Departments, developers, etc.) on social, economic, biological and physical aspects of land management in pastoral, agricultural, forested and near urban areas.

The Division of Mathematics and Statistics conducts research into applied mathematics and statistical theory and collaborates with scientists from other Divisions in the application of statistical techniques in their investigations.

Statisticians generally are involved in all the stages of a research program. Statistical techniques are required to interpret numerical results collected during a research program; however, the statistician's most useful contribution is often during the initial planning, when advice is given on the design of experiments to ensure that they provide valid and precise answers to the questions being asked.

The Division of Mineralogy research into the geology, geochemistry and geophysics of mineral exploration, the physical and chemical processes used to separate valuable minerals from their ores, the chemical and metallurgical processing of these minerals to produce usable materials and certain environmental problems associated with these processes. They also seek to understand how ore minerals are concentrated to form ore bodies of economic significance.

Marine Laboratory, Marmion - This section was previously housed in the State Fisheries Laboratory in Waterman together with the State Government Fisheries and Fauna Department. The State Government built the Waterman Laboratory complex in conjunction with CSIRO who made a cash contribution of \$30,000

towards the cost of the seawater reticulation system. The proposal to extend the building to provide a separate establishment for CSIRO adjacent and linked to the State owned Fisheries building in Waterman was dropped when the Stirling Local Council and the nearby local residents objected to it.

State owned land was purchased at Marmion on which the laboratory was erected. Stage One was built at the cost of \$669,000 and completed in December 1976. The contract period was 50 weeks.

The Marine laboratory complex was designed to allow for future growth of all sections of the complex. Stage Two consists of scientists' offices and laboratories in the North, Administrative Offices, Reception Foyer and Main Entrance to the West, Library, Conference Rooms, etc. to the South and Workshops, Stores, etc. to the East. Main entry is from Leach Road, Marmion. The laboratories are positioned so that they face into the central courtyard where it is hoped large aquariums can be installed at a later stage. The buildings are designed with earth bunds on three sides in such a way that the strong winds are directed away from the complex by the shape of the roofs and also to give it a domestic scale to harmonise with the immediate residential environments. Large ducts for future piping of seawater are already installed ready for the installation of seawater piping and pumping system at Stage Two which includes further laboratories and large enclosed aquariums for the detailed study of the Western Rock Lobster and the Australian Salmon.

The Division of Wildlife Research, Helena Valley - The Wildlife Research section of CSIRO started in an office in Museum Street in the City. It then moved to the University of Western Australia and then shifted into a house in Caporn Street, Nedlands, converted by Construction to provide laboratory facilities in 1962.



It was not until 1964 that the Wildlife Research shifted to the Helena Valley site which was privately purchased and contained three existing residential type timber framed asbestos clad buildings scattered over 15 hectares. The site is transversed by the Helena River on the southern section and is bounded by Clayton Road North, and Fyfe Road to the East. It was not until 1973/74 that a master plan was designed for the site at Helena Valley with the main laboratory/office and library complex built and completed in 1975 at the cost of \$434,000.

The Wildlife group research the biology, ecology, behaviour and physiology of species. The information collected is used in the control of wildlife pests and developing a management plan for the preservation of certain wildlife species. Emu, noisy scrub buds, galah, white-tailed black cockatoo, black swan, magpie, lark and silver gulls are some of the species under study. The study involves extensive field research examining aspects of the climate, the topography, the vegetation, the fauna of the area and the behaviour pattern of the species.

The laboratory complex is built around a courtyard bounded by laboratories on the south, scientists' offices on the north, library to the east and conference room, kitchen, toilets, plant room, etc. to the west. The building is domestic in scale and is designed to blend in with the environment using timber weather boarding, brick end walls and large tinted windows as elements for elevational treatment. Various sections of the complex are stepped down to suit the sloping site.

The buildings are air-conditioned and air-conditioning is designed in such a way as to enable the supply to be cut off at various sections of the complex not occupied when the staff are on field trips.

Provision is made for the expansion of all sections of the complex without incurring excessive costs through modifications of the existing buildings. The buildings are designed to allow the location of large bird cages for detailed study from the various offices.

Stage 2 of the complex involves the provision of storage and workshop areas estimated to cost \$80,000. The project is now being documented and is sited adjacent to the existing Herbarium building (built in 1973) south west of the existing main laboratory complex. Tenders are to be called in November 1978.

The Regional Administrative Office, West Perth - Originally this group was located in Floreat Park and in November 1976 moved to rented premises in Kings Park Road, West Perth.

The Regional Administrative Office is responsible directly for personnel delegations, processing and paying of accounts, and serves as the Public Relations and Display Area for CSIRO, Western Australia. The department gave advice on the suitability, the upgrading and planning of accommodation.

The Division of Forest Research, Kelmscott - The regional laboratories of the Division of Forest Research were built by the Department of Construction in 1962. At that time the laboratories were part of the Department of Interior. It was then transferred to the Department of National Development and later to the Department of Primary Industry before it became part of CSIRO organisation in 1975 with Divisional Headquarters in Canberra.

In 1972, the complex was extended to form an L-shaped building at the cost of \$70,000. The extensions provided more offices, laboratories and a workshop and garage type outbuildings. The 1.7 hectare site is situated in Albany Highway, Kelmscott.

The major part of their research is concerned with the disease of Jarrah forest commonly known as Jarrah Dieback. Jarrah Dieback is caused by the root-rotting fungus called 'Phytophthera Cinnamomi'. Extensive studies have been made on the behaviour and development of the fungus; particularly how it persists and how it spreads through the forest.

Kimberley Research Station, Kununurra - This Research Station was built and has been run by the State Government in conjunction with CSIRO since 1946.

The State Government aims their research at increasing production efficiency and solving the immediate problems of existing farmers. The Australian Government is responsible mainly for longer term research designed to improve resource utilisation throughout North Western Australia, taking into account environmental and social conditions.

In July 1974, CSIRO took over the station on a 25 year lease and operates the Research Station as part of the Division of Tropical Agronomy.

Their research includes studies on tropical crops and pastures and irrigated crops around the Ord River.

The site comprises a Tourist Display Centre, Administration building, two laboratory blocks, 14 residences, 1 single men's quarters, tennis court, swimming pool, various workshops, sheds and stores and holding yards. The site is 1700 hectares and is situated on the banks of the Ord River.

Since the 1974 change of occupancy, our department has carried out maintenance, upgrading and new works at the Station.

L. HEAH/T. HOLTON

#### 24. WORK FOR OTHER REGIONS

The Western Australian Region has close association with the Northern Territory, basically as climatic conditions are similar, their boundaries adjoin and a large proportion of Western Australian Region senior staff have during their careers in the Department of Construction served in the Northern Territory Region.

Both Regions have vast empty spaces, problems of logistics in the 'wet', voracious termites and special building requirements near the coast to withstand tropical cyclones. The sea link with Darwin is by State ships from Fremantle so there are many trade links binding users to suppliers in Western Australia.

Increased design productivity achieved by the Western Australia Region in recent years has allowed it to take on a consulting role for building and engineering services. As a consultant to the Northern Territory Region in the years 1970-1978 the Western Australian Region provided a design and documentation service for a section of the Education Program and other major projects. Some of the more notable projects were -

Dripstone High School (Darwin)

Sadadeen High School (Alice Springs)

Darwin Community College Multi-Use Building,  
Trades Buildings

Stuart Highway Reconstruction - Hook Road  
to Berrimah  
Alice Springs Court House  
Schools of the Air (Alice Springs, Katherine)  
Darwin Powerhouse Engineering Workshop and Store

Cyclone Tracy struck Darwin on Christmas Eve 1974. Frank Statham was in Melbourne acting as Deputy Secretary at the time; he immediately took up the challenge of co-ordinating the whole of the Department's efforts for providing aid to the stricken Darwin.

An emergency procurement centre was set up in Perth and a convoy of trucks with equipment, transformers, generators for first line repairs to the electrical reticulation system was despatched.

Two experienced engineers, Messrs Humphry and Dennett were flown into Darwin on New Year's Eve to join the Darwin Reconstruction Study Group and study the mode and sequence of failures whilst the evidence was available.

The Study Group investigated the extent of damage caused by Cyclone Tracy, categorized damage to dwellings and accommodations for the reconstruction of Darwin which laid the base for the work of the Darwin Reconstruction Commission.

The Western Australian Region provided the initial contract negotiation teams who undertook the examination of contracts current when Cyclone Tracy struck. It was necessary to cancel contracts where projects were severely damaged and reconstruction to the same design should not be undertaken and to re-negotiate contracts which were required to be ongoing to provide for changed conditions following the cyclone. The cancellation of contracts involved negotiation of damages, assessment of costs of suspension, insurances and payment for materials requisitioned from building sites for emergency repairs.

In that period immediately following the cyclone, the Western Australian Region provided services to assist staff evacuated from Darwin and sent specialist personnel, administration and stores staff to Darwin to provide essential assistance.

Western Australian Region staff manned an airport information centre in conjunction with a number of Social Service Organisations to place Darwin evacuees in accommodation around Perth.

With the granting of self government to the Northern Territory the Western Australian Region has extended its facilities to the new administration and carries out inspections of goods, fabrication of equipments and testing of plants before despatch to Darwin. In addition, design and documentation facilities on a consultancy basis are maintained.

As well as serving the Northern Territory, the Western Australian Region has undertaken documentation of projects for the Victoria/Tasmania Region comprising a number of telephone exchanges and regional office accommodation for Sunshine.

KEN WYLIE

## 25. THE RESERVE BANK

The Reserve Bank provides banking services for Commonwealth and State Governments. It is banker to the Trading and Savings Banks and is involved in the regulation of Australian monetary and banking systems. The Bank's other main activities include administration of exchange control, management of stock registries for Commonwealth debt, the channelling of the nation's gold and foreign currency resources into a central pool of reserves and the making of short term loans to rural and marketing boards and co-operative societies of primary producers. The bank also prints currency notes, mints coinage and distributes on behalf of the Commonwealth Government.

A head office building was constructed in Sydney, followed by projects in other States. A planning team comprising Departmental Architects and Engineers, Reserve Bank officers and Consulting Architects was set up to direct the policies of both client and architectural designers in the development of the Reserve Bank project for Perth. Contract documentation was prepared at the Bank and Special Projects Branch of the Department of Construction, Sydney. The Western Australian Regional Office was responsible for the Contract Administration.

The new Perth Reserve Bank building is situated in the main business centre of St. George's Terrace and stands on land previously occupied by a historic hotel built in 1833 and Furnival Chambers, an office building built about 1905. In 1960, the hotel was donated by the owner to the University of Western Australia. In 1962, the hotel was passed in at auction and bought by the Reserve Bank.

The CBC Bank owned the site occupied by Furnival Chambers. During the early planning stages, it became apparent that the shape of the site would not permit a satisfactory solution

which met both the City Council requirements for vehicle access clearance from the corner of St. George's Terrace and Barrack Street and the Bank's needs for cash handling. By an exchange of equivalent sites with the Commercial Banking Company of Sydney Limited, it was possible to locate that bank adjacent to the T & G Building and provide a regular site for the Reserve Bank, having a frontage of 26.7 metres and a depth of 62.7 metres. The Commercial Bank Company of Sydney agreed to this exchange of sites on terms acceptable to both banks. Demolition of the existing buildings was completed in 1968 and erection of the new eight storey CBC Bank building was completed in 1970.

### Design

The design objectives for the new Reserve Bank building were to provide a high quality prestigious building, having maximum facility and security for bullion and cash handling, maximum economic development to the limit of allowable plot ratio and accommodate the difficult sub-soil site conditions.

Studies were also made of alternative heights of the building to determine an optimum aesthetic relationship with the adjacent soon to be completed CBC building and the nearly dominant 18 storey T & G Insurance building. The result was recessed balconies at each floor level providing sculptural relief and sun protection. The building has two basements, a ground floor and ten upper floors.

The building structure has a concrete encased steel frame in two separate front and rear sections upon concrete raft slab footings. The building frames of front and rear sections are laterally stabilized by rigid frame joints and the front section longitudinally stabilized by sheer walls at side boundaries. The building has instruments located under the raft slab footings to record building movement during construction and possible future seismic movements. The



street facade is clad with Australian marble and side and rear walls, reconstructed stone, all selected for their colour, texture, contrast and freedom from maintenance. Windows are double glazed in anodised aluminium frames.

The lower basement contains the main vault, cashiers department and coin processing. The upper basement has bulk cash handling areas which armoured vehicles use, for the distribution of notes and coin to banks and other organisations. The ground floor public entry is across a paved plaza on the same level as the main banking chamber and left lobby. Bonds and stock business are handled at the first floor. Office letting areas are located between the second and sixth floors. Reserve Bank management, staff amenities, cafeteria and the auditorium occupy the seventh and eighth floors whilst the ninth and tenth floors are for mechanical plant and lift motor rooms.

The building is fully air-conditioned and has three fast automatic lifts, a goods lift and two special bullian lifts. The building also includes many sophisticated security systems such as closed circuit TV surveillance, sonic alarms, remote control mechanisms in high security areas and a variety of automatic and remote controls of the normal office service systems.

### Construction

The main building contract was let to Leighton Contractors Limited of Melbourne, Victoria. The sub-contractors were:-

Lifts - Otis Elevators

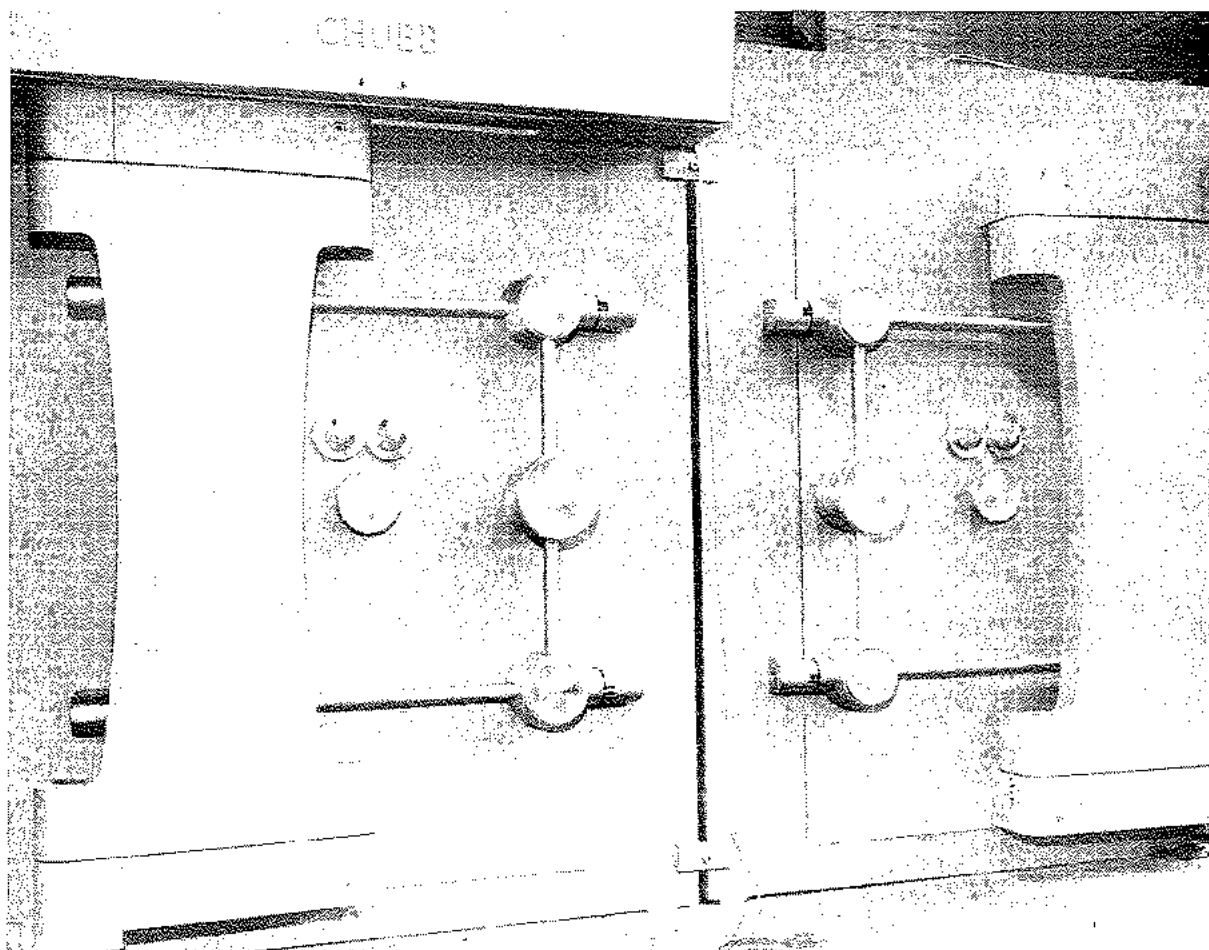
Safes - Chubbs

Electrical Work - C.W. Norris Mechanical  
& S.W. Harts

The construction period was from February 1970 to August 1973 and final cost was approximately \$7,617.000.



RESERVE BANK CONSTRUCTION 20 MAY 1971  
A SUB-CONTRACTOR'S CRANE HAS OVERTURNED



RESERVE BANK VAULT DOORS 17 TONNES EACH

The construction site was difficult due to a nearby highly congested traffic intersection and because of the massive basement building works required below the water table. This was in unstable soil strata with a consequent effect on the support of existing adjacent buildings.

A 400 mm thick non-structural slurry wall was constructed around the perimeter of the lower basement prior to bulk excavation of sand and clay. The principal of the slurry wall process is to pour an impervious concrete retaining structure in an excavated trench supported by bentonite mud. The trench was excavated in panels so that the bentonite slurry which replaced the excavated soil was able to support the sides of the excavation. When a panel had been excavated, a reinforcing cage was lowered into the trench and concrete placed by means of a tremie to fill the panel, and displace the mud. The completed concrete wall was braced with Bailey shoring across the excavation to support the top of the wall while bulk excavation proceeded and the raft foundation was poured.

The lower basement raft slab concrete pour was a major construction event. The specifications called for the raft pour to be completed in a single continuous operation within a period of 20 hours. To avoid traffic congestion approval was obtained from both the Perth City Council and the Police Department to close one half of the Terrace and the pour started at 1.00 a.m. on a Sunday under floodlighting. Six concrete pumps stationed at street level delivered concrete through pipelines to the lower basement area. Thirty readymix transit trucks were employed to supply concrete to the pumps from plants at East Perth, Belmont and Osborne Park. Approximately 2,162 cubic metres of concrete were delivered and placed in this manner in 18 hours.

Other features of the construction involved the installation of two vault doors, each weighing approximately 17 tonnes,

which presented difficult handling problems on the restricted site.

In a few short years since the completion of the project, the immediate city environment has changed considerably, and yet the Reserve Bank building still remains very much in harmony with it's environment.

JIM DUFFY

## 26. DEFENCE SERVICE HOMES CORPORATION

Six weeks after the Armistice of the Great War, the Governor-General of Australia, Sir Ronald Craufurd Munro-Ferguson, received the War Service Homes Bill from the Australian Parliament for his assent. The date was Christmas Day 1918. As a result the War Service Homes Scheme came into operation on the 6 March 1919.

In November 1921, administration of the Scheme was taken over by the State Government and managed by the Workers Homes Board (later the State Housing Commission) until 1973. At this time, a Western Australian Region of the Australian Department of Housing was set up and took over responsibility for the Defence Service Homes Scheme from the State Housing Commission

On 30 November 1973, the Department of Housing and the then Department of Works combined to form the Department of Housing and Construction. With the formation of this Department the Director established the working arrangement that the Construction Division act as consultants to the Housing Division in all engineering and architectural matters.

This assistance has taken many forms in the subsequent years. However, two major projects that stand out are the sub-divisions of broadacres in the Perth suburbs of Hamersley and Leeming. On both of these sub-divisions, the Department of Construction acted as the Design and Construction Authority.

The Hamersley sub-division is situated in the Northern Corridor of Perth, approximately 13 kilometres from the City Centre. The land is gently undulating and well wooded with some extremely large jarrah and tuart trees. The layout of the Hamersley sub-division was developed by a consultant Town Planner engaged by the State Housing Commission. The plan

adopted was a modern layout with cul-de-sacs associated with ring collector roads. The sub-division was to be fully serviced with sealed, kerbed roads, water, sewerage, telephone and underground power and gas. Provision would also be made for a primary school and pre-school sites. Hamersley would be a very attractive modern sub-division of 221 lots of varying size that would ease the large demand for Defence Service Land in the Northern Suburbs of Perth.

Considerable thought was given by Engineers from the Department to the best and most economical methods of design and construction, particularly because all expenses associated with the development would, in the long term, be passed on to the prospective purchasers of the land. Design and drafting was assisted by the Departmental computer program 'Subdivision'.

The Estate fell within the jurisdiction of the Stirling City and like the Metropolitan Water Supply, Sewerage and Drainage Board, the Council had rigid and comprehensive by-laws and work standards that had to be met. These standards were adopted for the design of all engineering services within the sub-division.

Careful consideration was given during design to the most economical choice of materials. Perhaps the most significant aspect of design was the decision to use P.V.C. pipe for all the sewer mains in the sub-division. Special permission was obtained from the Metropolitan Water Supply, Sewerage and Drainage Board to use these pipes and the result was very satisfying to all concerned and considerable savings resulted.

Construction of the Engineering Services was undertaken by the Civil Day Labour force of the Department of Construction. This decision was made because it would enable the blocks to be made available in much less time than if tenders were to be called. Also, Day Labour could offer a competitive price

together with high work standards.

Co-ordination of the project would also remain completely under the control of the Engineers who had done all the initial liaising and planning with the numerous State and Local Government Authorities. The construction of all trunk services associated with the sub-division was carried out by these Authorities. This work included water supply headworks, internal water reticulation, sewerage headworks, underground power, drainage headworks and trunk road works. These works accounted for approximately 50% of the total cost of the development.

Construction of the internal roads, drainage and sewerage was started in July 1975 and completed in February 1976. All work went according to schedule and was completed on time within the allotted funds.

'Hamersley', the Department of Construction's first major job for the Defence Service Homes Corporation was completed to the mutual satisfaction of all those involved.

Towards the end of 1976 the need for a sub-division to the South of Perth was evident and it was decided by the Defence Service Homes Corporation to purchase part of all overall development in the area. This was to make the Leeming development considerably different to that at Hamersley.

The second part of the development comprised the construction of services common to other members of the development syndicate. These included main stormwater drainage, trunk roads and sewerage pump stations with associated rising and gravity mains. The cost of the common services was distributed among syndicate developers proportional to the area of land they held.

Because of the success of the Hamersley sub-division, it was felt that Leeming could be developed in a similar way, as a Day Labour managed project. Approval was granted at the end of June 1977 and construction was begun soon afterwards.

All sewer work at the Leeming Estate was let to contract as it was felt that particular expertise was required to work in the area due to the high water table and deep excavations. Also, letting this part of the work to contract would considerably shorten construction time on the project. The Leeming sub-division was completed in March 1978.

Although the relationship between the Defence Service Homes Corporation and the Department of Construction has been brief, it has been very productive. Some 345 housing lots have been developed in two Perth suburbs north and south of the river.

WALLY EDWARDS